

COREPLAN



IN THE

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City of Vancouver Planning Department

Ray Spaxman, Director

COREPLAN IN THE QUARTERLY REVIEW (January 1981 to January 1983)

Throughout the exercise to research and prepare Coreplan, various aspects of the project have been regularly reported in the Quarterly Review. These are presented in chronological order in this package. A complete reading of this series of articles will reveal the gradual refinement of the Coreplan perspective. The comparatively crude analysis of the earlier articles is sharpened in later articles that take advantage of information collected during the Coreplan exercise.



The Vancouver COREPLAN

The Vancouver COREPLAN is underway. City Council have requested staff to review and update the existing policies and plans for Vancouver's core area in light of change forecast to result from several massive public projects and an unprecedented rate of new private construction in the metropolitan centre.

Well over a billion dollars in new public investment is proposed for downtown Vancouver during the 1980s. This includes a new trade and convention centre with facilities for over 8 000 delegates; a 60 000-seat, covered stadium/amphitheatre; a half-billion dollar light rapid transit system connecting to suburban Surrey; a 1986 World's Fair to celebrate Vancouver's centennial; and B.C. Place, an 80 hectare (200 acre) permanent urban renewal project on and around the World's Fair site.

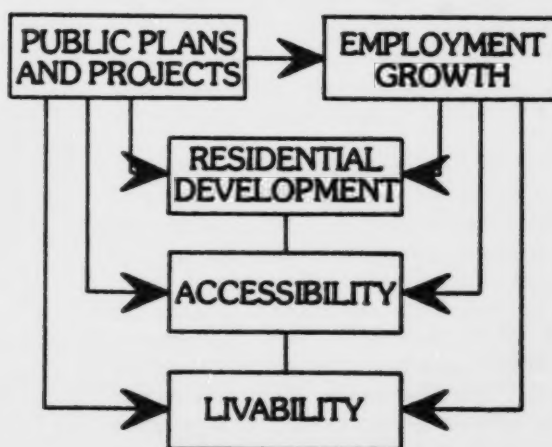
Private development interest in Vancouver's centre has shown a marked acceleration. At the end of 1980 about 460 000 square metres (nearly 5 million square feet) of new downtown office

space was either under construction or in the development permit pipeline. Another 200 000 to 300 000 square metres seems readily visible on the horizon in projects being discussed but for which formal development permit applications have not yet been submitted. In what is increasingly appearing to be a local boom economy, expectations of enough space to accommodate another 35 000 office employees in the downtown by mid-decade are quite probable. This is over twice the rate of office employment growth during the 1970s when the present core area plans were prepared.

In addition to providing a renewed policy context for managing the change generated by accelerated public and private investment, the COREPLAN is intended to establish increased coordination among the disparate sub-area plans which presently govern the core; to help resolve the growing ambiguity about the effectiveness of Vancouver's role in pursuing the objectives of the Greater Vancouver Regional District's Livable



COREPLAN CONCERNS



Region Program; and to provide the basis for a new overall plan for the entire city of Vancouver, starting from the centre out. In the last pursuit, there will be a great deal of attention paid to the recently completed Goals for Vancouver.

As core area development proposals are likely to have far-reaching implications, particularly for housing and accessibility, the boundaries for the COREPLAN study have been drawn to include a very wide area. The COREPLAN will look not only at the traditional downtown and central area, but also at the inner-city residential areas immediately surrounding the core, including Kitsilano and Grandview-Woodland. For some critical areas of concern, the COREPLAN's angle of vision will have to encompass the entire city and indeed the entire region.

Initial COREPLAN work is proceeding in two phases. First a ten-to twenty-year projection of the momentum established by existing plans, projects, and investment intentions is being prepared. Starting with current public plans and projects as "givens", and extrapolating a likely rate of employment growth from current economic expectations and development opportunities, the momentum projection will tease out implications for future housing demands and availability, for transportation accessibility to the core and through the surrounding city, and for the general livability of the place. Livability will be indicated in terms of economic and social choice, disruption and comfort, amenities lost and gained, and overall built form.

The momentum projection will be evaluated against the Goals for Vancouver, against operational criteria established by City departments, and against public comment. Both problems and opportunities implied by the core's current direction will be noted. In the second phase, this evaluation will be used as the basis for preparing several alternative plans to manage or redirect the momentum. These alternatives will be probed and refined by intense public review and iterative technical analysis over about a two-year period. Eventually a preferred strategy for managing change in the metropolitan core should emerge. This new COREPLAN, carefully selected and molded by as many diverse interests as possible,

will be instrumental in the success of Vancouver's centennial decade, providing a critical foundation for the city's second hundred years.

Watch for more COREPLAN news in future issues of the *Quarterly Review*.

Ted Droettboom



Urban Design Four Basic Values

There are four basic values which underlie most urban design work. Some of these values are not normally thought of as the designer's province, others are thought of as exclusively so.

In truth, we are all designers. At the smallest scale (which may be the largest, cumulatively) we all decide what colour to paint our house, whether to put flowers or bicycles on our balconies, whether to wash our cars or mow our lawns, and what colour umbrella to have. At a larger scale a development company may construct several blocks of housing, or a public agency such as the Harbours Board may install a container terminal or bulk cargo facility. One of the prime reasons we make these decisions may be dollar cost – what we have to pay to get them. Another reason may be the dollar profit. But the cost or profit is always played off against a series of other values, consciously or otherwise. It is important to explicitly recognize these values especially as we proceed with planning for the core area of the city.

Clarity and Understandability

It is important to know, and have confidence you know, where you're going and where you are; to understand what the different areas in the city are for or about by looking at them; to be able to build up an organized construct of the city in your mind. You don't get this from reading maps. Although initially you may use maps to check up on reality, you soon build a mental map and as you move through the city you see things which let you know where you are in the mental map. Everyone constructs his own map. What is elaborate and detailed in one person's may be a blank in another's. However, the fact remains that the arrangements of the physical structure of the city can make mapping easy and sure, or difficult and ambiguous.

Picture yourself coming into a city composed entirely of nice white houses with pretty red doors, all about the same size, arranged on streets like those typical curvy subdivision streets, all with the



usual numbers and street names. But no trees or gardens, no stores, no office buildings or apartments, no hills. How long would it take you to be able to find your way around without a paper map? And yet it's all very tidy, maybe even very beautiful. But there aren't enough visual clues, there aren't enough meaningful differences to provide the required clarity and understandability. The meaningfulness cannot be provided but the differences can, and if they are appropriate to the function and form of the area, people will imbue them with meaning.

Meaningful differences work at different scales. In Venice, you find your way around walking by looking at and remembering the shop window displays and the peculiarities of the small squares which occur along the streets which are otherwise much the same. You move at a slow speed and you become tuned in to the significance of visual clues which are very small by North American standards. At the other end of the spectrum, the driving public in Vancouver is moving faster and visual clues which pedestrians can see do not enter the consciousness of the driver. He relies on the gross changes of scale or type of road itself. Some continuity of the route he is on – literal physical continuity and visual continuity of treatment – is reassuring, as are distinctiveness and visibility of various areas of the city, or particular structures which are important destinations.

Comfort, Safety, and Usability

Hot-cold, wet-dry, quiet-noisy, private-public, clean-dirty, maintained-unmaintained, sunny-shady, windy-calm, odorous-non-odorous, lighted-dark, "propped"-unpropped" (i.e. furnished for behaviour) – most places, whether rooms, parks, plazas, cars, or streets, can be described in terms of where they fall along the spectrum of each of these factors. There is no particular virtue in being hot, calm, lighted, or any other of the extremes of the ranges. But there is virtue in having all the characteristics of a place add up to something which is appropriate for the type of behaviour which is to go on.

A windswept open space (bane of current urban design theorists) can be invigorating and delightful beside the ocean, provided you have some places within it or nearby to get out of the wind, e.g. English Bay Beach with its big sheltering logs. A windswept plaza in the middle of downtown totally enclosed by highrise buildings, with a lot of dust blowing about, and with no connection to a shore to justify the wind is almost never delightful, and with ice and snow can actually be dangerous.

A bench located in a private, dark corner of a park may be a nice place for a wino to sleep for the night, but will be perceived by anyone else as dangerous and to be avoided at night. Sometimes people who feel that winos sleeping in public is something that ought not to go on will insist on altering the environment so it is no longer appropriate to the activity – e.g. removing the bench or installing a light. However, winos are ingenious – as is everyone who needs an environment to support his activities – and a newspaper over the face will provide the privacy and the dark if an unsuitably located bench must be used.

Uniqueness

In this age of global culture, environments seem to be undergoing the same homogenization as everything else. People travel by airplane and by television, and in addition to seeing things they want to copy (revolving restaurants) or that they want to avoid ("Manhattanization"), they become aware of the sameness of many cities. This seems to have made it more desirable to have a unique identity of some kind.

London, Paris, Venice, Manhattan, San Fran-

cisco, Rio de Janeiro are all big cities but what is more important is that they all have strong images. Everyone knows Manhattan, most people couldn't tell you what neighbouring Queens looks like. Sao Paulo, Brazil, has seven million people – a very notable sized city, but can you ever remember seeing a picture of it? You could probably draw one of Rio.

While it certainly doesn't hurt that a unique visual image helps tourist promotion, what is more important is that it provides something special for citizens to love about their city. Vancouver newspapers very frequently print large pictures of the city – no story, just a picture. It's a sort of community gloating. Vancouver citizens have stated quite explicitly through the recent Vancouver City Planning Commission Goals Program that a unique image is important, and have further identified the natural setting as the most significant component of that image.

The value placed on uniqueness also works at a local neighbourhood scale. While in many cases the visual clues which contribute to a unique area may not be apparent to an outsider, sometimes a neighbourhood has such strong identity that its existence in itself contributes to most citizens' mental image of the city as a whole. Vancouver's Chinatown is a prime example.



Diversity with Order, or Vice Versa

Most people will state that they want their environment to be "attractive" and proceed to describe something which may not be at all attractive to someone else. If "taste" is so "subjective", how can it be dealt with at all?

It can be hypothesized that people's taste seems to operate on two levels. First, at the level of the particular, we have a sense of what we ourselves would want ("Oh, I'd never live in that...") but it is tempered by a sense of what someone else

might want ("... but everyone has a right to his own taste ..."). However, at a second level, we also judge the particular within its context. If it is perceived to "fit in", then the judgement stays at the above. If it is perceived to be somehow too out of place, too inappropriate, the judgement becomes: "Everyone has a right to his own taste, but *that* is a blight on the neighbourhood."



How different does something have to be to enter this category? It depends on the degree of visual cohesion of the existing area, as well as the degree of tolerance of the people there. The first factor can be analyzed from an outsider's point of view – consistency of building size, type, placement, and detail will be apparent to the eye. The second is more difficult to guess at. In fact, we cannot guess; we have to try things out and ask people, or look at reactions to previous proposals. We seem to have a greater tolerance for anomalous forms if there is a convincing reason for them. A new structure with two garage doors on the front and a forty foot tall tower would be perceived as an inappropriate house form in most Vancouver neighbourhoods, but as an appropriate firehall form (which is not to say residents would welcome a firehall).

Well, is everything just fitting in with what went before? What about the innovative, the creative? What about style? We like that with which we are familiar, but we also seem to have a fascination with the new, particularly in North America. This phenomenon is perhaps most evident in the realm of fashion. Although for most people clothing is probably more intimately bound up with self-image than the home, and the home more than the neighbourhood and city, an analogous though much slower process of stylistic change through image-making is at work. (A difference is, of course, that clothes have a shorter life span than

buildings. We live in and around our previous building styles much longer. They are part of our self-image much longer). Although individuals certainly have style preferences in buildings – they are buying or renting a certain self-image if they can afford to have a choice – it would be fruitless to try to determine what style is "best" in absolute terms at the neighbourhood or city level. Styles simply evolve over time and cities evolve with them. We are thrown back to judging only whether something is adequately related to its context, and to whether or not it is a good example of its own particular style.

Given then that there is no way (yet) to "measure" attractiveness proceeding from considerations of taste or style, for what can we look?

An examination of environments which people seem to think are "attractive" shows very often that it is the balance between diversity and order which is critical. The eye must be interested but not overwhelmed. Extremes of monotony and chaos are to be avoided. In a typical older Vancouver suburb (and in the West End as well!) the order is provided by the strong street geometry, similar building siting, and large amounts of informal landscape material around and between houses. The diversity comes from the variation in massing, roof lines, colour, and stylistic detail. Individual curtain-wall building facades normally illustrate a preoccupation with order and no consideration for diversity. Originally this was perhaps exciting, in that they themselves were new high contrast elements within their settings of older buildings. Whole environments are now formed of them, however, and complaints of "inhumanity", lack of detail, and monotony are heard, and heritage building conservation has become a strong concern.

These four values provide a guide to the way in which the city should work for people in urban design terms. We hope that by keeping them – and the more detailed urban design principles they imply – in mind while we look at hypothetical futures for the core area, we will be able to ensure that Vancouver develops in a way that is not only efficient or profitable but also clear, understandable, comfortable, safe, usable, unique, orderly, and diverse.

Irish French

The City's Capacity for More Housing

Vancouver is almost fully developed with very little vacant land left for new residential development. What is the potential for increasing the housing stock in these circumstances?

Zoning Shapes Development Potential

Zoning establishes the development potential for property by regulating the use of land and the density of development. A comparison of the current use of land with the potential uses permitted under present zoning regulations can identify opportunities for increasing the housing stock. Single-detached dwellings in multiple-dwelling zones are an example of the underutilization of land. Their sites are zoned for a use allowing more dwellings than currently provided.

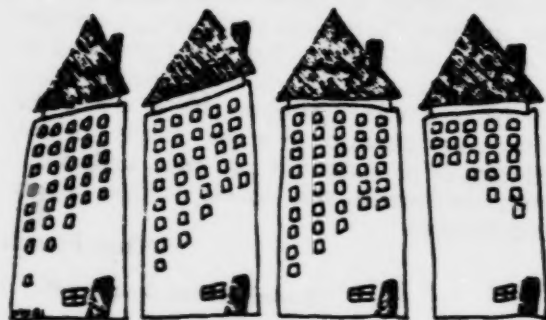
Limited Room to Grow

A preliminary analysis of residential development potential shows that there are about 488 hectares of land in Vancouver which are vacant or underutilized, and redevelopable to a more intense residential use.

The following table shows that about half of this land is now occupied by single-detached dwellings. About a quarter of the available land is vacant, though it is not known how much is truly vacant and how much is in the process of redevelopment. The "other" category consists of lands in the False Creek Comprehensive Development District now used for non-residential purposes but expected to be redeveloped in a residential use.

487.5 Hectares of Land with Residential Development Potential

Current Land Use	Maximum Residential Use Allowed			Total Land Area	
	Single-Detached	Duplex and Conversion	Apartment and Townhouse		
Vacant	80.3	4.3	37.1	121.7	25.0%
Single-Detached		187.6	52.8	240.4	49.3%
Duplex or Conversion			50.6	50.6	10.4%
Other			74.8	74.8	15.3%
Total Land Area	80.3	191.9	215.3	487.5	100.0%



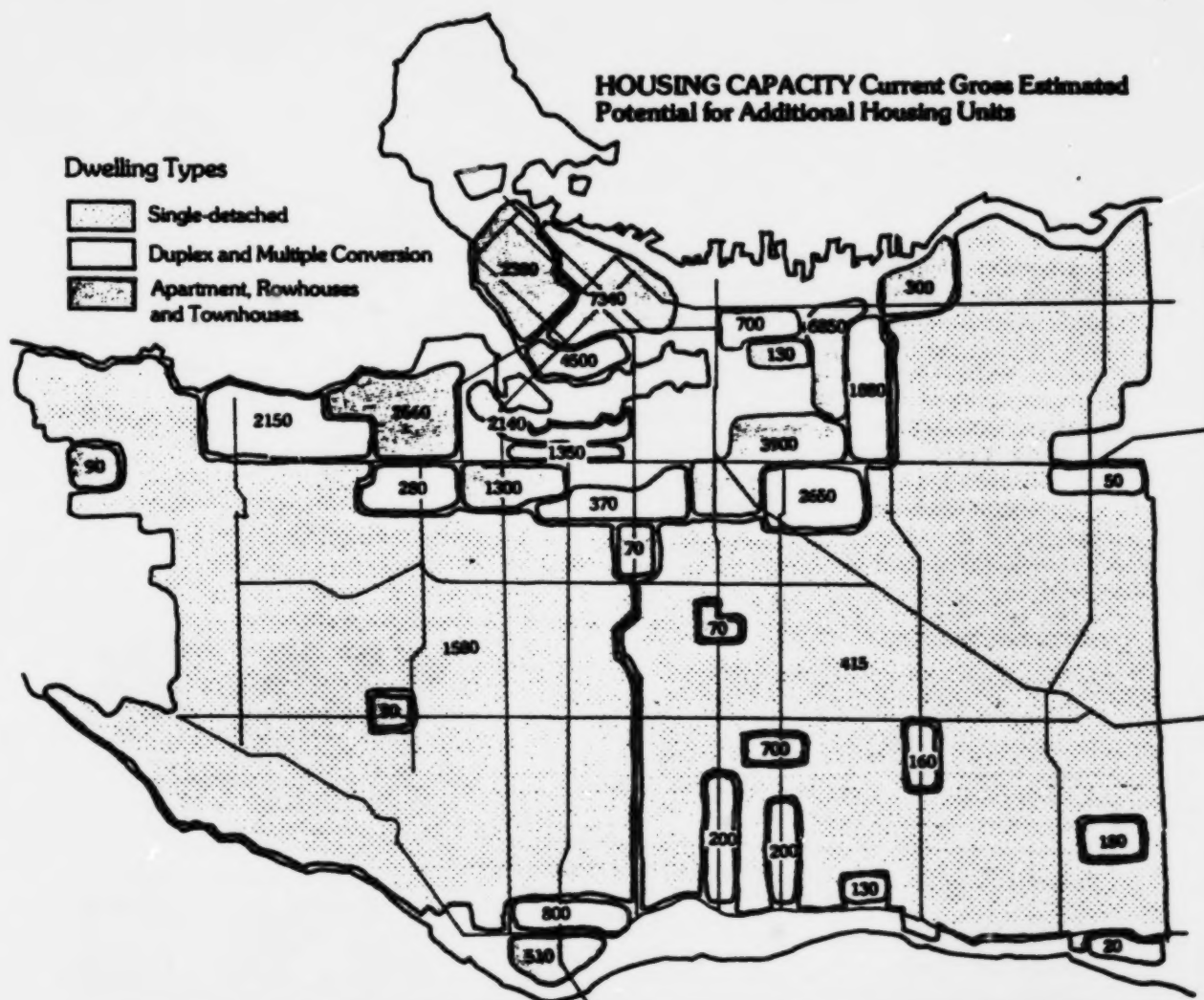
Capacity for More Dwellings

Preliminary estimates indicate that 46 100 new housing units could be built in Vancouver, as shown on the accompanying map. However, construction of this new housing depends upon the demolition or conversion of dwelling units now occupying redevelopable land. As shown in the following table, about 6 600 existing single-detached dwellings and 4 300 duplex or conversion units would be affected. The result is a net housing potential of 35 200 units.

HOUSING CAPACITY Current Gross Estimated Potential for Additional Housing Units

Dwelling Types

-  Single-detached
-  Duplex and Multiple Conversion
-  Apartment, Rowhouses and Townhouses



New Housing Potential for 35 200 Dwelling Units

Dwelling Type	Additions	Demolitions	Net Additions
Single-Detached	2 000	6 600	- 4 600
Duplex and Conversion	9 500	4 300	5 200
Apartment and Townhouse	34 600		34 600
Total Dwellings	46 100	10 900	35 200

This estimate has two major limitations. On the one hand, not all sites identified will be economic to redevelop. Some will have little practical development potential under current regulations. A quick analysis of apartment-zoned land in Kitchikano revealed that about a third of the

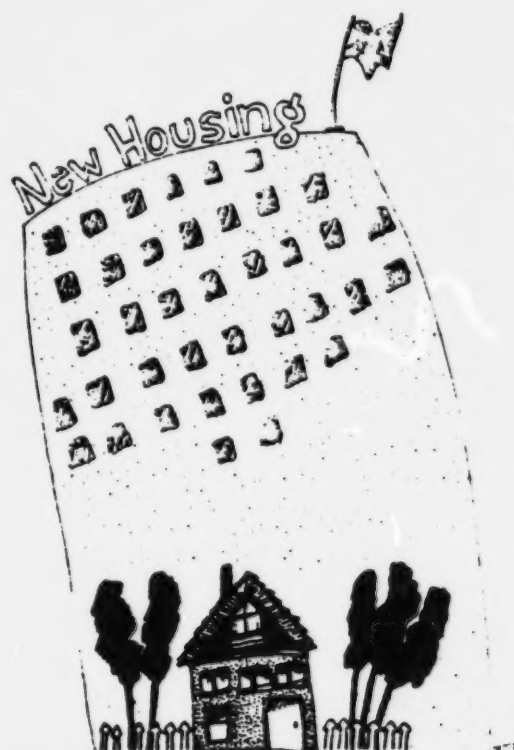
land not in apartment use was in locked-in properties too small to redevelop to the maximum use allowed. Another third were occupied by multiple conversion dwellings — large homes converted to apartment use and already near the allowable density.

On the other hand, there are some properties which are presently in their allowable use but at a density below the maximum permitted by zoning. Much new construction involves the redevelopment of such properties to a higher density. Examples of this are the building of three houses where two stood before, and the construction of a 30-unit apartment building where a building of 20 units previously stood.

Further analysis would be necessary to take these factors into account in the development of firmer estimates of housing capacity. It should also be kept in mind that because apartment and townhouse densities are variable, other estimates are possible besides those presented here.

Composition of the Housing Stock

The preceding estimate of housing capacity represents a twenty percent increase in the stock of housing in Vancouver. The current composition of the stock would be significantly changed if this housing potential was fully realized.



Potential Change in the Composition of the Housing Stock

Dwelling Type	Existing		Potential		Change
Single-Detached	72 800	40.9%	68 200	32.0%	- 6.3%
Duplex and Conversion	12 300	6.9%	17 500	8.2%	+42.3%
Apartment and Townhouse	93 00	52.2%	127 600	59.8%	+37.2%
Total Dwellings	178 100	100.0%	213 300	100.0%	+19.8%

Single-detached housing would form a smaller part of the housing stock than at present while higher density types of housing would form a much larger share. It is estimated that apartment and townhouses or rowhouses would grow from 52 to 60 percent of the stock, while single-detached housing would fall from 41 to 32 percent.

Some Reason for Concern

Several concerns are raised by these estimates. The first pertains to the appropriateness of the new housing mix. Will new housing built under current zoning be suitable for family households? The large shift to townhouse and apartment housing may be inconsistent with new housing demand if new units are too small and otherwise inadequate

to meet the needs of families.

A second worry is that the demolition of existing housing required to realize housing potential might exacerbate the housing situation of present occupants. Many of the estimated 10 900 single-detached, duplex, and conversion dwellings on land in multiple-dwelling zones may be affordable, family-oriented, and of sound quality. Their loss might require some means of ensuring comparable housing opportunity in new housing.

A third concern is that residential development potential might be far less than estimated. In the last few years, Vancouver's housing stock has grown by about 2 000 dwellings annually — almost half with government assistance. However, apartment vacancy rates remain very, very low and

house price increases in the city are among the highest in the nation. Obviously housing supply is not responding fully to increased housing demand.

The city's housing capacity may be contributing to this problem. First, the amount of land redevelopable to more intense residential use is actually quite small. It is about 6.5 percent of all land zoned for residential use in Vancouver — an area roughly 1.2 times the size of Stanley Park. In addition, this land is generally dispersed across the city and, as noted earlier, it may include many sites too small to redevelop to their maximum use. A second factor is the cost of land; the scarcer land is, the more expensive it becomes.

Furthermore, in a tight housing market, existing residential buildings on underutilized properties are experiencing increased market values in their present use. If they are to be demolished for new housing, their value adds to the land cost for new housing.

Further Growth in Housing Demand

Current housing production is not adding enough dwellings to the stock to meet new demand. This problem may become worse. Vancouver has long performed a key role in the region's economy. It will undoubtedly continue to do so in future for the attractiveness of the city's core for office and other economic activities, the new regional facilities proposed there, and the construction of rapid transit imply a growing role for the city's core. Continued employment growth and new housing demand are therefore highly probable.

We presently see employment growth of as many as 35 000 new workers in the core by mid-decade. Where will these additional workers and their households live? If the housing stock does not grow apace, the new population attracted to the region will have to locate in distant suburban areas. Consequently, the number of commuters will grow and travel time and costs will increase. Will additional transportation system capacity be built sufficient to serve this increased travel demand?



What Actions Can the City Take?

Should housing demand be reduced by decreasing office development potential in the core and thereby reducing employment growth? Or should residential development potential be increased to accommodate anticipated employment growth? No matter how these questions are answered, there are two reasons in support of a stronger housing role for the city.

First, the environmental and financial costs of regional transportation system improvements might be lessened somewhat if people have the opportunity to live closer to their workplace. Second, the availability of municipal services and school facilities in Vancouver as compared to new suburban areas could lessen overall public expenditures to serve regional population growth.

More housing in Vancouver would require increased housing capacity, as well as greater housing production. Bonus schemes and spot rezonings have a role to play but seem inadequate for significantly increasing our residential development potential. Instead, major zoning amendments may have to be considered. The first of these could very well be on the north shore of False Creek. The zoning for this area now permits a maximum of 4 500 units — quite short of the 10 000 proposed there as part of the Provincial Government's B.C. Place Project.

Other major rezonings might be adopted to allow multiple housing next to parks, community centres, schools, or shopping districts. More housing in the core, residential redevelopment of Gastown and Yaletown, housing on the Central Waterfront, and increased densities in existing low density residential areas present additional opportunities.

These and other proposals to increase the city's housing stock will undoubtedly be examined more and more closely in future. A necessary qualification for any proposal is that it must respect the cherished features of the city which the Goals for Vancouver program has identified. At the same time, any proposal must strive to realize goals for the city which residents have agreed about. Alternative housing futures for Vancouver should therefore be imaginatively explored by all of us.

Phil Mondor

Coreplan's Progress



In the January 1981 *Quarterly Review*, we introduced the Vancouver Coreplan, a comprehensive review of the policies governing private development and public investment in Vancouver's metropolitan centre. The first phase of the Coreplan work program is a ten-to twenty-year projection of the momentum established by past trends, existing plans, and current investment intentions. Preliminary and partial results from that momentum projection are now available and are reported in the next two articles.

While the projection results are subject to further analytical refinement, we are sufficiently confident in the findings thus far to suggest that they ought to be taken very seriously. They warn of some quite significant concerns for Vancouver's near-term future. If our projections are realized over the next ten to twenty years, Vancouver could be in a great deal of trouble.

We are certain, however, that the future will not unfold precisely as projected. It might not even remotely resemble our forecasts. Cities are remark-

ably resilient and robust institutions. They tend to adjust themselves just as the most dire of consequences are at hand, keeping the situation at least tolerable, surviving in spite of themselves, and confounding the doomsdayers.

We are certain, as well, that Vancouver will have to adjust. It will have to profoundly change, either to accommodate or to reject current trends. It could become a very different city than we know today; some might say a less livable city.

That adjustment can occur in a nearly random, haphazard fashion as intolerable circumstances arise. Or it can occur in a planned, deliberate way in anticipation of problems to be solved, opportunities to be captured, and goals to be achieved. We believe that some planning, some anticipation, can help reduce the public and private costs of adjusting; it can avert disproportionate impact on particularly unfortunate groups, and it may even allow us to maintain levels of livability higher (maybe even much higher) than just tolerable. That is what the Coreplan is all about.

Ted Droettboom

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Core Office Growth and City Residential Development...

A Coreplan Report

In doing the Coreplan momentum projection, our purpose is to understand the implications which growth in the core has, not just for the core itself, but for the entire city. The core both serves and is served by Vancouver as a whole.

One of the principal ways in which Vancouver serves its core is by providing a place of residence for core employees. The last decennial census told us that in 1971, over sixty percent of the then nearly 130 000 core employees resided within the city (see "Place of Work, Place of Residence", *Quarterly Review*, October 1976). Vancouver residence serves the region, as well. Every core worker residing in the city is one less commuter which the congested regional transportation system outside Vancouver has to accommodate.

Vancouver is Rapidly Reaching a Limit in Residential Development

But our momentum projection reveals that Vancouver's ability to serve employment growth at the core with new residential development in the city is rapidly reaching a limit — at least within current community standards of residential density and housing character. If there are no significant changes in our standards, then very shortly nearly all employment growth at the Vancouver centre will have to be served by residential growth in locations quite distant from that centre. That growth, and the commuter demand which it will generate, could further crowd the already congested crossings of the Fraser River and Burrard Inlet, could exert pressure for additional urban development on previous Fraser Valley farm land, and may require heavy additional public expenditures on transportation. And because housing in the City of Vancouver will become an increasingly rare commodity relative to demand, its price is likely to continue to rise, becoming increasingly unaffordable to most of us, that is until the effects of unbalanced growth become self-limiting.

Eventually, the cost of housing, the price and hassle of commuting, or the taxation necessary to maintain an adequate level of transportation service will make Vancouver and its core a less desirable place to invest. Economic growth and new employment will taper off, displaced perhaps to elsewhere in the region, or more likely elsewhere in Canada. The Vancouver core will find another growth plateau, a period of slow development which some will even perceive as a decline. Some will call it a local recession or even a depression. Some will want to find blame. Many will wonder why. The information we are piecing together for the Coreplan momentum projection begins to suggest some reasons.

One important key to the puzzle lies in Vancouver's zoning by-law and associated official development plans. These segregate land in Vancouver into permissible uses and set density and other development criteria for each. The combination of these use and development regulations and the supply of available land sets, at any one time, a maximum legislated capacity for growth. This capacity, fixed by human values and political rules, may be either more or less than the absolute physical holding capacity of the land, its environment, and associated infrastructure — including such things as streets, sewers, and water supply. Ideally, legislated capacity should be related, though not necessarily equal, to physical capacity. In reality, it may bear no relation. It may be only an arbitrary artifact of arcane political/economic deliberations. But, regardless of its origins, capacity as defined through zoning, stands as a very important statement of public intent. In Vancouver, at the moment, that intent seems at best ambiguous, at worst inconsistent.



Two Beakers Can Illustrate Our Point

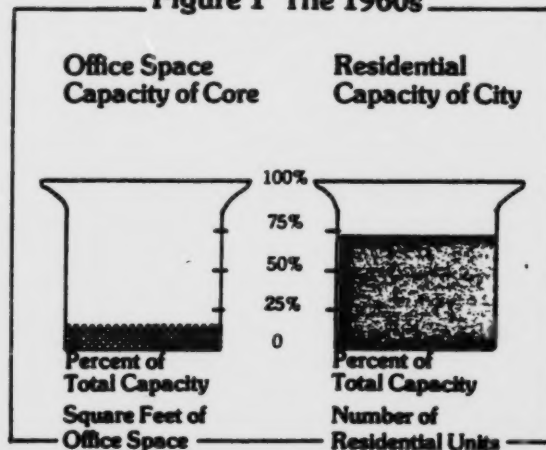
An example from the preliminary Coreplan momentum projection illustrates our point. Imagine two side-by-side beakers of equal height, but unequal volume. As we fill them, say with some liquid, relative fullness is readily apparent by comparing the heights of the liquid columns. If both beakers are filled to one-fourth height, they will each be filled to one-fourth of their ultimate capacity, though, of course, absolute volume will be different for each. The two beakers may even be measured in different volumetric units (litres and gallons, for instance); but that is unimportant, because right now we are not so much interested in absolute volume as we are in comparing the rates at which the two beakers become full and the relative amounts of remaining capacity. The equal or standardized heights allow us to do that quite adequately.

Now, imagine that one beaker, the one on the left, has been designed to represent in volume the total legislated zoning capacity to accommodate office space in the core. Office work is the most important constituent of core employment, being somewhere around forty percent of the base, but about ninety percent of the current and projected growth. The total volume or capacity of our beaker is about 70 million square feet, enough (using very liberal space per employee ratios) to accommodate about 260 000 employees. That is just about three to four times the number of office employees currently estimated to be working in the core. That capacity is set entirely by our existing zoning by-law and official development plans, plus six million square feet assumed for B.C. Place.

Now turn your attention to the beaker on the right. Its capacity has also been determined by public decision, but it is filled with a much different commodity — this time residential dwelling units for the entire city. At full volume, the City's zoning by-law will allow it to contain about 210 000 units, about 35 000 more than it holds at present.

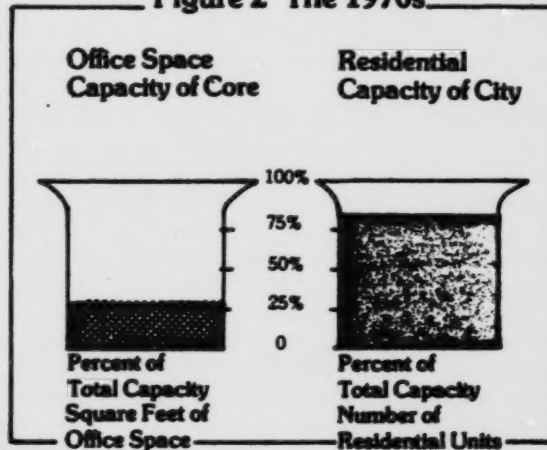
Let us next observe how each of the two beakers gets filled up over time. Figure 1 shows the status of the beakers at the end of the 1960s. The core office space beaker was filled to just over ten percent of capacity with lots of room to grow. On the other hand, the beaker on the right, the city's residential capacity, was already three-quarters full.

Figure 1 The 1960s



Office space continued to grow at an average rate of 6.2 percent per year throughout the decade of the seventies, with the result that by 1980, it had slightly better than doubled, now filling about one-fourth of its zoning container (Figure 2). Housing grew much more slowly relative to its "ultimate" volume. Averaging about 2000 to 2500 units a year, new construction brought the city to above eighty percent of that permitted by current zoning. Housing development, like nearly all growth, appears to slow down as it approaches a limit.

Figure 2 The 1970s



That same limiting phenomena, expressed through a logistic curve, is assumed to just begin affecting core office growth during the eighties. Unlike the seventies, core office space is expected to not quite double during the next decade, reaching a point just short of half-full by 1990 (Figure 3). Interestingly, about one-third of the projected office growth during the next decade (equal to nearly one-third of our existing, presently occupied office inventory) was already under construction or in the proposal stage at the beginning of 1981; and strong prospects for the B.C. economy suggest no immediate abatement in core development interest.

In response to the strong demand generated by a potential near-doubling of core employment, and taking into account increased government

initiatives, and new economic incentives for housing providers, the pace of residential construction is very optimistically (and perhaps unrealistically) assumed to hasten during the eighties, as compared to the seventies. Taking current policy directions seriously, we suggest it might be possible to serve over half the projected increase in core employment with city housing at currently permitted densities (including those proposed for B.C. Place).

By the Nineties, the Housing Beaker Will Be Full

This fills up the housing beaker, however, meaning that by the decade of the nineties, without a substantial change in residential zoning, the city will have absolutely no room to service new core employment with housing (Figure 4). Assuming that every employee on average generates a demand for two-thirds of a housing unit, at least 40 000 new units will have to be provided elsewhere in the region, just to accommodate core employment growth.

By extrapolating our office growth logistic curve to its zoning limit, and assuming no lower physical constraints (such as transportation capacity) or economic constraints (such as housing price) we produce a year 2000 office space level of between eighty and ninety percent of capacity. This is indicative of a slow-down from previous growth rates, but continues to suggest employment increasing faster than we have traditionally been able to provide housing.

Growth capacity and growth rates for employment and housing in Vancouver are then clearly imbalanced, partly as a result of public choice and public intent exercised through the City's zoning powers. This imbalance need not be bad per se, particularly if we are confident in the region's ability to economically accommodate Vancouver's residential overspill. But growing evidence suggests that confidence may not be justified. Our legislative imbalance may have profound implications for the quality of life in Vancouver. It provides still another incomplete but plausible explanation for some (though certainly not all) of Vancouver's housing crisis. It also forebodes of a growing transportation dilemma. Read on.

Ted Droettboom

Figure 3 The 1980s

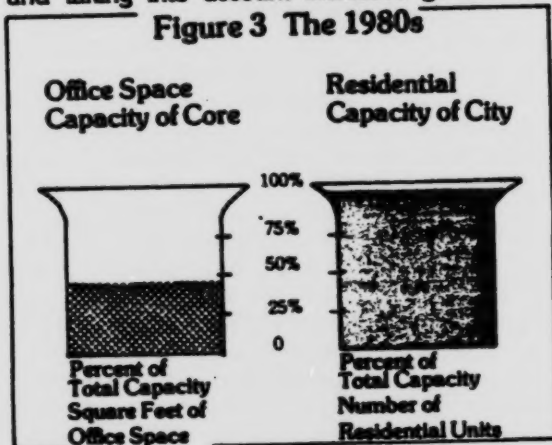
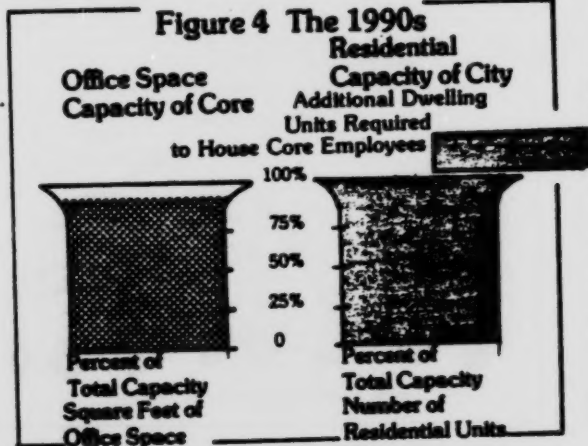


Figure 4 The 1990s



Core Growth and Accessibility...

A Coreplan Report

A number of concerns arise from the unbalanced capacities and growth rates described in the previous article. Among the biggest is the potential impact on the city's and the region's transportation system, particularly if the concentration of office space capacity at the core continues to be filled up at current rates. We have spent some time with the City Engineering Department looking at potential consequences, and our preliminary conclusions are not comforting.

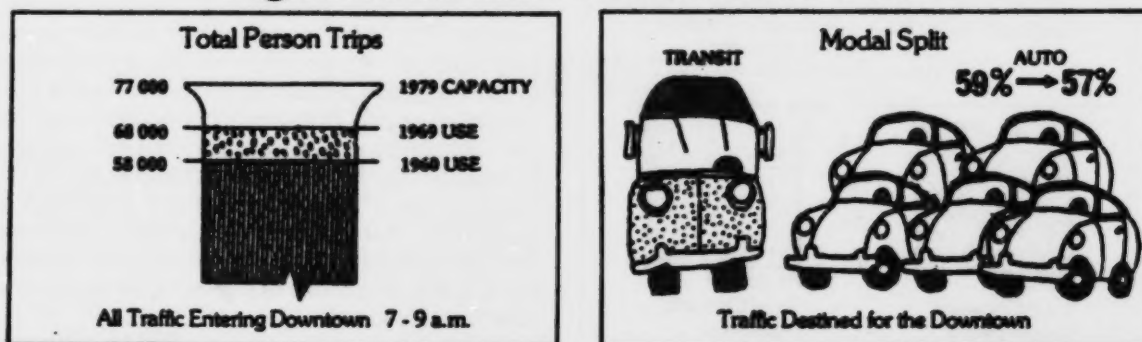
As in the previous article, we will again use a beaker analogy to illustrate our findings. But this time, we will have to replace the beaker twice during our progression of four decades, as we project two overflows during that planning period.

As in development, we found it difficult to establish a relevant absolute physical capacity for the city's transportation system; traffic can theoretically continue to move up to incredible limits, just even more slowly. The operative capacity is then set by what delay people are prepared to tolerate. As a policy, Vancouver and the GVRD have said that they do not want to experience any more delays beyond those existing currently. We have, therefore, established — at least for comparison purposes — a policy capacity at the 1979 transportation system service level. (1979 is the last year for which good system usage data exists.) Any traffic increases beyond those existing in 1979

require an expansion in system capacity. That expansion can occur in three ways: through an actual physical increase in transportation facilities; through better management and use of existing facilities (e.g. staggered working hours); or through a policy redefinition of acceptable service levels, that is the delay we are willing to tolerate. If we establish a lower standard for the service we expect from our transportation system, then it can continue to provide capacity without facility or management improvements, though obviously not as well as previously.

Figure 1 illustrates the situation during the 1960s for the downtown. Unfortunately, good data is not available for the core as a whole; but as fifty million square feet of the core's seventy million square feet of office space capacity is downtown, it represents the lion's share of the potential accessibility problem. During the sixties, total person trips entering the downtown during the 7 to 9 morning rush period increased from 58 000 to 68 000, a level obviously of some worry to those who authored the Livable Region Program during the early seventies, but still considerably short of what we were to experience in 1979. During the same period, modal split, the relative proportion of trips carried by auto and by transit, changed slightly from fifty-nine percent auto to fifty-seven percent.

Fig. 1 Downtown Traffic Flows 1960s



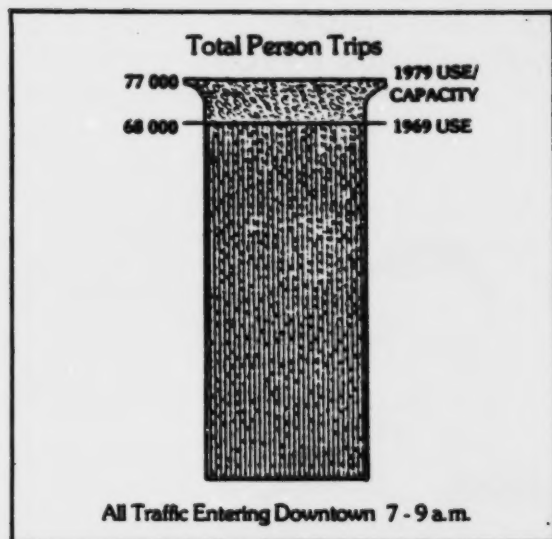
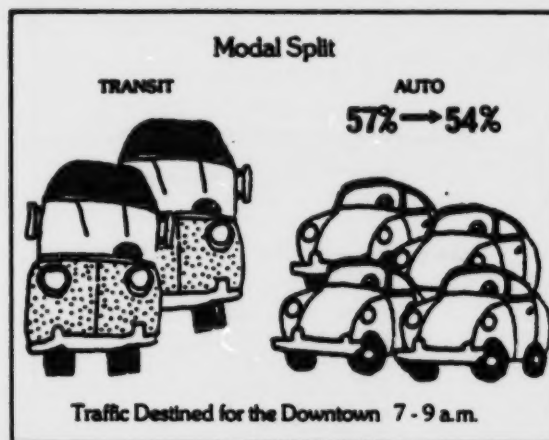


Fig. 2 Downtown Traffic Flows 1970s



During the 1970s (Figure 2) person trips continued to increase, and by definition they reached system capacity in 1979 at 77 000 during the morning rush. Modal split also continued to shift toward transit, from fifty-seven percent auto to fifty-four percent.

In the 1980s, we anticipate a substantial increase in physical capacity largely in the form of the

first leg of some sort of Light Rapid Transit (LRT). This increase could enable the city to accommodate on the order of 99 000 rush period trips, 22 000 more than in 1979, and still maintain 1979 service levels into the downtown (Figure 3). Unfortunately, by 1990 there are likely to be about 104 000 trips during rush hour, 5 000 in excess of this policy capacity.

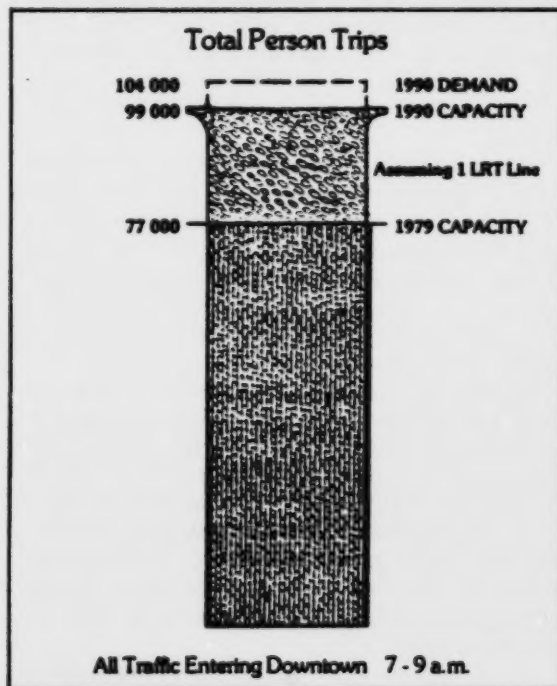
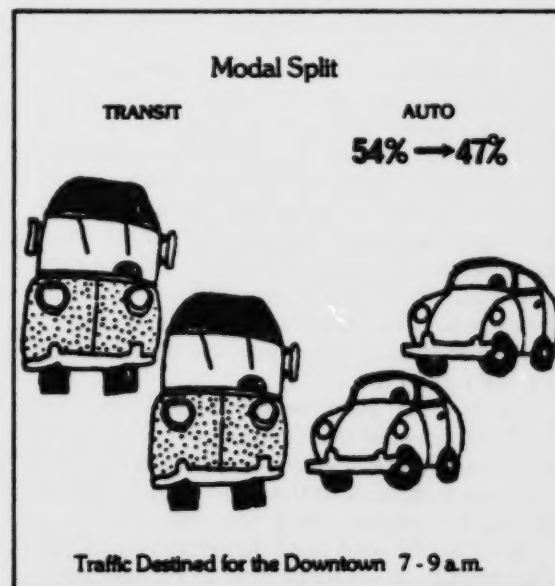


Fig. 3 Downtown Traffic Flows 1980s



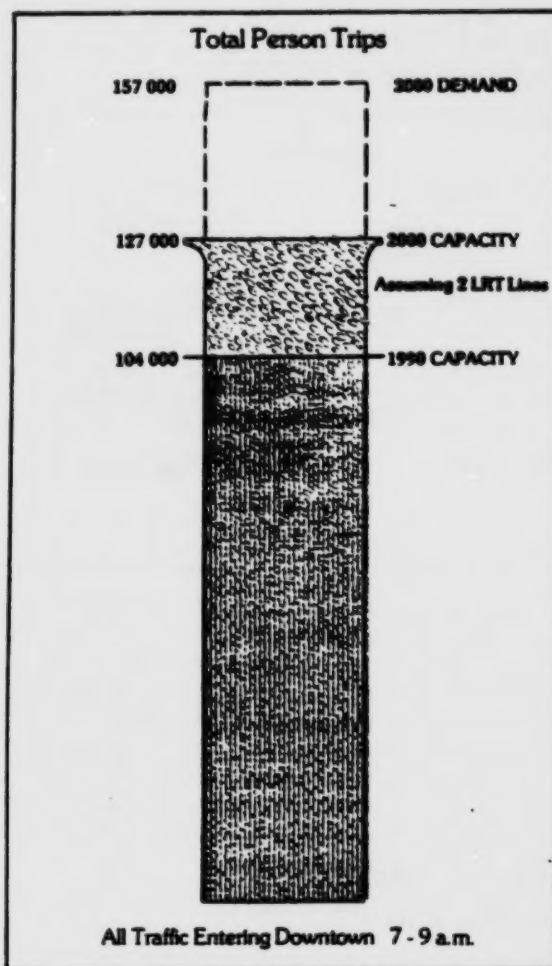
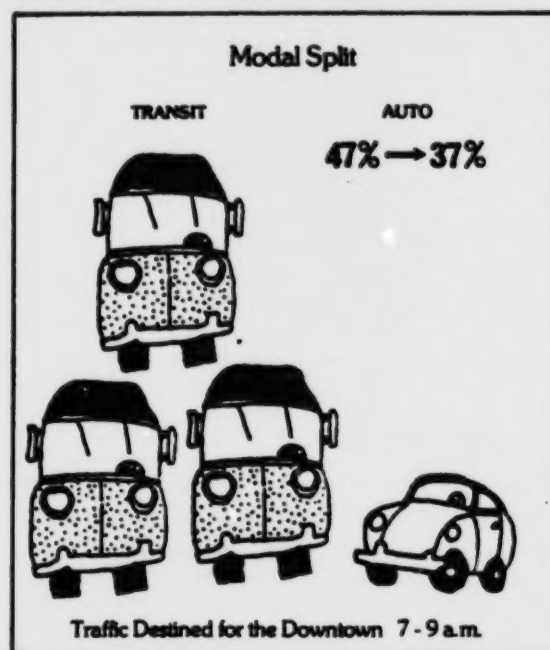


Fig. 4 Downtown Traffic Flows 1990s



In the absence of any other changes to increase physical capacity or to make better use of the system (and none are planned in the next decade) 1990 demand can only be met by accepting lower service levels. What seems likely to happen is that the use of private vehicles will increase until it approaches the practical limit of the street system, resulting in streets that would be essentially plugged during the rush periods. The rest of the increase would be absorbed by public transit, involving a shift away from auto use at more than twice the rate of the 1970s.

So, by 1990 even the substantial investment in LRT will not enable us to maintain 1979 service levels. Everything else equal, we will have to define a new policy capacity at the 1990 level of service, replacing our beaker with a new one.

If in the 1990s we build the second leg of LRT to Richmond, we would be able to increase capa-

city, at 1990 service levels, to 127 000 trips (Figure 4). However by the year 2000, demand associated with office growth is expected to be around 157 000 trips. So even with both LRT lines operating at capacity and a street system that could not accommodate substantially more vehicle traffic, we could meet less than half of expected demand.

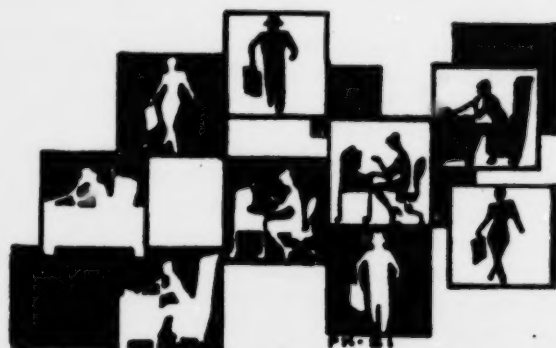
Obviously it is unlikely that this situation would occur as access difficulties would probably act to reduce the rate of office growth. But if it is wished to service office growth, then we would have to get yet another beaker and this would require radical changes in the use of the street system or substantial additional investments to expand the physical capacity of the system.

It may be that Vancouver neither wants nor can afford a larger beaker with all that it means in transportation cost and quality of life. If that is the case, then it implies some very difficult public choices involving transportation facilities, residential development and densities throughout the city, and commercial growth at the core. The Coreplan process is intended to assist Vancouver in considering and making these choices over the next few critical years.

Paul Raynor

Downtown Office Employment ...

A Coreplan Report



Estimates of downtown office employment in Vancouver have been generated over the years using a floor-space-per-person ratio which expresses the average number of "net rentable" square feet occupied by each office worker. This ratio has recently been calculated for new office buildings as part of the Coreplan work. The results have been applied to projects either under construction or in the development permit proposal stage.

Until the Coreplan office space study was completed, the most recent ratios for office-space-per-person were calculated with 1977 data. The Coreplan survey covered office buildings completed and occupied between July 1977 and January 1981 in an effort to update projections for future growth. Over two hundred businesses occupying just under one million square feet of office space were visited during the survey to obtain floor space and employment data.

While the survey analyzed office space in the larger core, this article deals with employment in the downtown portion of the core in order to compare results with previous estimates of downtown office employment. The core is the north-central part of the city bounded by Burrard Inlet and English Bay to the north, Larch Street to the west, 17th Avenue to the south, and Nanaimo Street to the east. The term "downtown" refers to the downtown peninsula west of Main Street.

The Office-Space-Per-Person Ratio Has Been Increasing

The Coreplan office space study generated a ratio of 241 square feet per person, which is the overall average net rentable floor space allotted per office worker in the downtown office stock built between 1977 and 1981 at employment levels in effect in January 1981. The ratio for the remainder of the core excluding downtown using the same vintage of office buildings and levels of employment is only somewhat larger at 261 square feet per person.

It is interesting to note that the office-space-per-person ratio has been increasing over the years. An article on the growth of downtown employment in the October 1974 issue of *Quarterly Review* (Vol. 1, No. 4, pp 24-28) reveals a ratio of 185 square feet per person for downtown office space built during the first half of the sixties. As the seventies approached and the supply and demand for office space exhibited some wild fluctuations, the space-per-person ratio increased to just over 200 square feet. The 1974 *Quarterly Review* study weighted the ratio for projection purposes at 203 square feet per person. By 1977, data from the Commercial and Industrial Space Inventory indicated the ratio was somewhat higher.

Through the excellent cooperation of the business firms selected for the Coreplan survey random sample, a ratio for the maximum carrying capacity of the office buildings was calculated in addition to the ratio for present conditions. Most of the firms surveyed estimated that they had room for more staff. Just over half the firms had moved into these new buildings in order to acquire more space. These are important factors to be considered when establishing any long-term projections of both floor space and employment. Hence, the ratio for present employment levels of 241 square feet per person is applicable to short-term projections of office employment for the next two to five years.

On the other hand, the ratio of 209 square feet per person, which was determined as the maximum carrying capacity of the office buildings constructed between 1977 and 1981, is more appropriate for calculations of the upper limits of long-term growth. Long-term projections are for periods of a decade or more.

If All Office Projects Proposed at the End of 1980 Are Built and Occupied, There Will Be 25 Percent More Office Workers Downtown.

To generate employment estimates, the office-space-per-person ratio has been applied to figures available for office projects in the planning and development stage for downtown Vancouver. Statistics for office projects proposed and under construction were published in the January 1981 issue of the *Quarterly Review*. These figures are gross floor space and have been reduced 15 percent to yield net floor space estimates needed to use with the space-per-person ratios.

The table shows the result of these calculations. The bench mark employment figure was calculated by adding the employment increase estimated between 1974 and 1979 to the employment estimate of 57 350 published in the *Quarterly Review* in October 1974. The employment increase between 1974 and 1979 uses the ratio of 241 square feet per person applied to development permit floor space data adjusted to net values.

According to the employment estimates presented in the table another 6 560 workers will occupy the office space scheduled to be completed by October 1982 or a 9 percent increase in the number of office workers downtown. Looking just another year or so beyond, the ranks of downtown office workers would swell to 89 990, or 25 percent more office workers than the present estimate of 72 420.

The employment projections assume that all the proposed office projects will be developed and that all of the new space will be occupied. A zero vacancy rate is used.

It should be remembered that the development permit statistics used in the table do not include the three to four million square feet of office space in large redevelopment projects in the discussion stage (including B.C. Place). Applying the current space-per-person ratio, these projects will add another 14 500 office employees.

The growth in the size of office employment could be even more dramatic than the results presented in the table if the maximum carrying capacity of new office space is considered. Using the ratio of 209 square feet per person generated from the estimates of additional space for workers, the total space under construction and proposed would increase the downtown office employment by a further 3 190. Incidentally, this maximum capacity ratio compares favourably with employment ratios for office space in other Canadian cities.

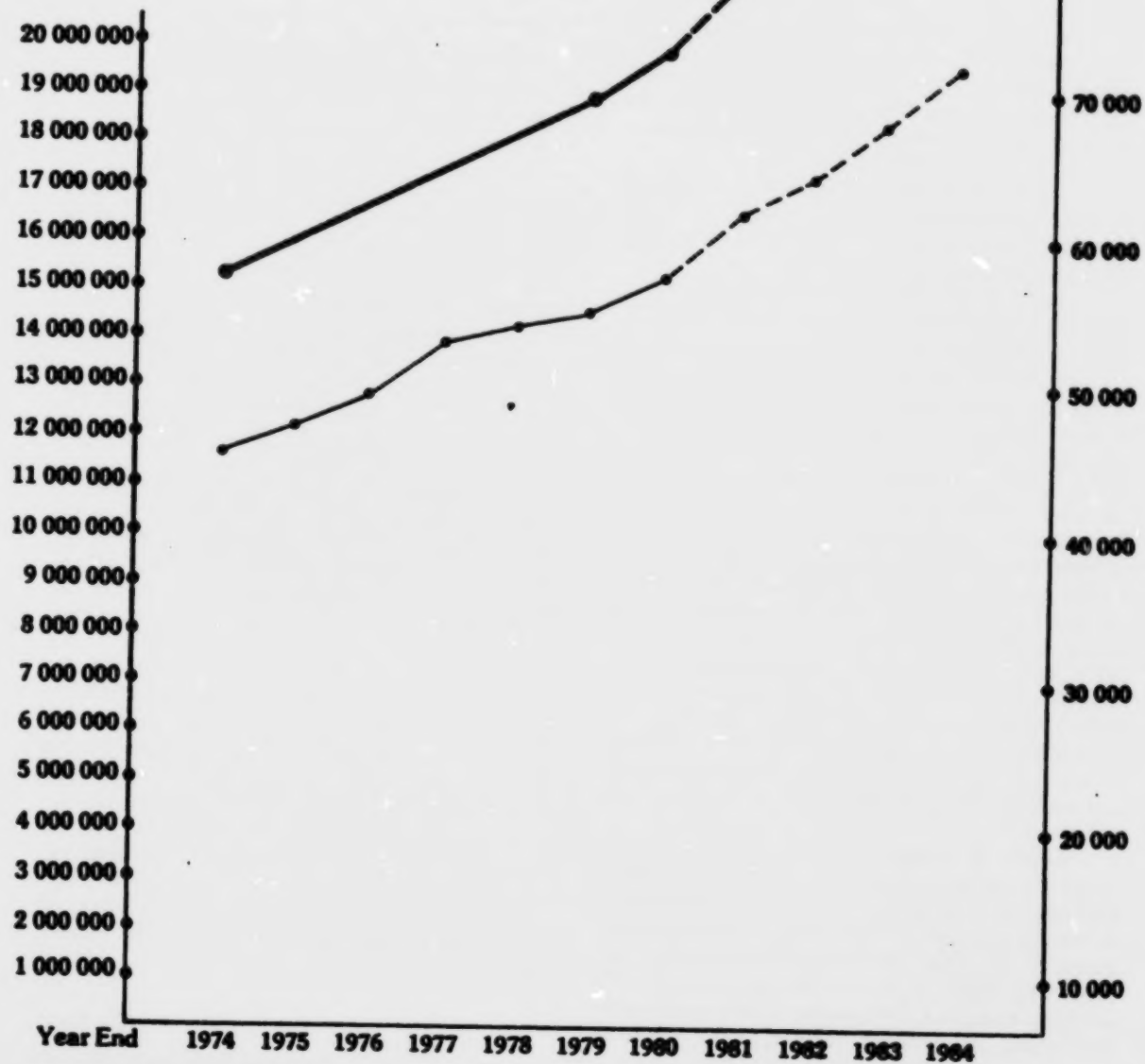
Additions to Downtown Employment				
Project Status, December 1980	Floor Space Office Use		Office Employment	
	Gross Sq. Ft.	Net Sq. Ft.	Increase	Total
Completed in 1980	914 800	778 430	3 230	72 420*
Under Construction	1 859 000	1 580 150	6 560	78 980
Development Permits Remaining Valid	564 600	479 910	1 990	80 970
Development Permits Approved But Not Issued	450 100	382 585	1 590	82 560
Development Permits Being Processed	2 107 600	1 791 460	7 430	89 990

*Office employment at the end of 1979 was estimated to be 68 190. This was derived by adding the 1975 through 1979 increase of 13 840 employees to the October 1974 *Quarterly Review* office employment estimate of 57 350.

At the End of 1980 Net Rentable Office Space Had Increased by 32 Percent Over 1974 Values While Office Employment Had Increased by 26 Percent.

Office Space
Net Rentable
Square Feet

Office
Employment



Office Space Is Growing Faster Than Office Employment.

Downtown office space and office employment estimates are displayed in the graph which has taken into account the floor-space-per-person ratios calculated for the *Quarterly Review* in 1974, as well as the ratio for downtown floor space from the Coreplan survey. The office space data taken from the development permit files of the City have again been adjusted to yield a net figure. The salient characteristic of the relationship between office floor space and office employment is that the office space is growing faster than office employment in downtown Vancouver.

Factors influencing the increase in the size of the space-per-person ratio are related to the types of businesses occupying office space and the types of buildings containing office space.

Certain businesses are more labour intensive than others and worker densities are higher resulting in a smaller space-per-person ratio. Examples of these firms are accounting offices, customs brokers, and insurance companies, all with ratios smaller than the average for the whole stock of downtown office space. Conversely, some types of firms exhibit a tendency toward lower worker densities which in turn yield larger space-per-person ratios. For reasons yet to be discovered, mining firms have consistently larger ratios. Medical offices and financial firms similarly produce space-per-person ratios larger than the average for all types of office space. A proportional increase of firms in the latter category will raise space-per-worker ratios and there is every indication that labour intensive office firms are decreasing in proportion to firms less labour intensive. Technological advances in data storage and word processing are diminishing manual work in the office work place.

Types of buildings also affect the size of space-per-person ratios in a more subtle way. Certain office buildings are like luxury apartment buildings, exclusive condominiums, and expensive automobiles. They are distinctive and costly, but most important of all for the purposes of this analysis, spacious. The prestige office buildings in Vancouver are generally located in the "Golden

Triangle" precinct of downtown. Office-space-per-person ratios from the Coreplan sample within the "Golden Triangle" were 288 square feet per person. The recently completed Daon building at 999 West Hastings contained a sample of offices with a ratio of 389 square feet per person. Obviously, as more buildings of the prestige type are constructed, the employment densities will be lower and the office-space-per-person ratios larger.

The Growth of Downtown Office Employment Has a Range of Policy Implications.

What the Coreplan office space study has achieved through its sample of office space completed between 1977 and 1981 is a representative profile of recent trends in office development in the downtown and the larger core. Furthermore, the maximum carrying capacity of this recently developed stock has been calculated through the cumulative estimates of office managers. As firms which moved to the new space grow, the worker densities will increase and the space-per-person ratios will fall, approaching the ratio generated from the maximum capacity estimate.

Combined with data for the older office buildings downtown, the Coreplan team can make some reasonably accurate assumptions about the present use and future growth of office employment. These assumptions about the supply of office space can then be related to transportation, housing, and the provision of other services.

The policy implications of this growth in downtown office employment range in scale from the regional level to the sphere of site specific negotiations for projects in the downtown. At the regional level GVRD growth share targets and transportation planning are influenced by downtown employment. Municipal services will be affected by employment growth trends. The timing and eventual size of the office component of major redevelopment projects has yet to be determined and these site specific proposals require careful evaluation.

Joe Stott

Investment in the Vancouver Core

Based on building permits, we estimate that currently about one-half billion dollars per year is invested in new buildings, additions, and building renovations within the City of Vancouver. About 70 percent or \$350 million of this takes place in the core, even though the core constitutes but 25 percent of the city's land area. The downtown, 3 percent of Vancouver's land, absorbs 36 percent of the building investments or about \$180 million each year.

These yearly permit values represent construction costs only and exclude land values and machinery. To give some perspective on total amount of money now invested in Vancouver and in its central areas, we can look at current market-value appraisals provided by the B.C. Assessment Authority (BCAA) for property tax purposes. In 1981, the BCAA appraised total land, buildings, and machinery in the City of Vancouver at \$22 billion. Of this \$9.6 billion or about 43 percent was located in the core and \$2.7 billion or 12 percent was downtown.

Clearly, then, the core and its centre, the downtown, constitute quite concentrated and quite active foci of economic interest within Vancouver. Most importantly, the proportion of new investment in the core and in the downtown, as indicated by yearly building permits, is much greater than the proportion of existing investments as indicated by market-value appraisals. This is suggestive of an increasing economic role for the downtown and for the core in Vancouver.

Figure 1
Percent Distribution of Land Area
City of Vancouver

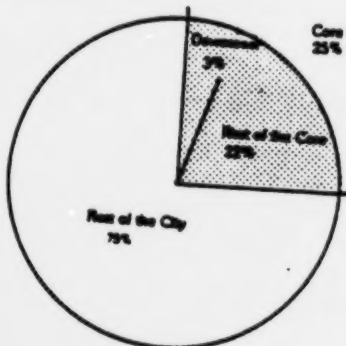


Figure 2
Percent Distribution of Dollar Investment
Completed Buildings, Additions, and Renovations
City of Vancouver, 1974-80

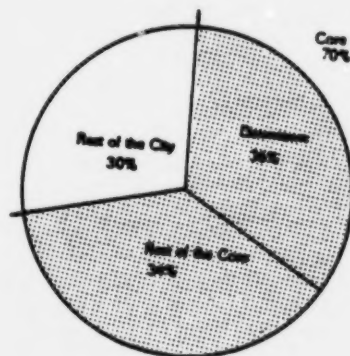
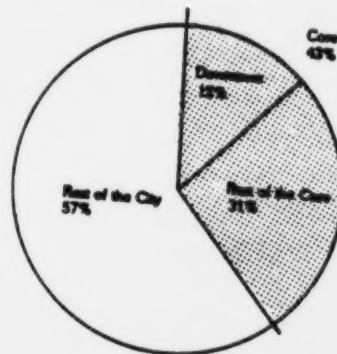


Figure 3
Percent Distribution of BCAA Market Values
Land, Buildings, and Machinery
City of Vancouver, 1981



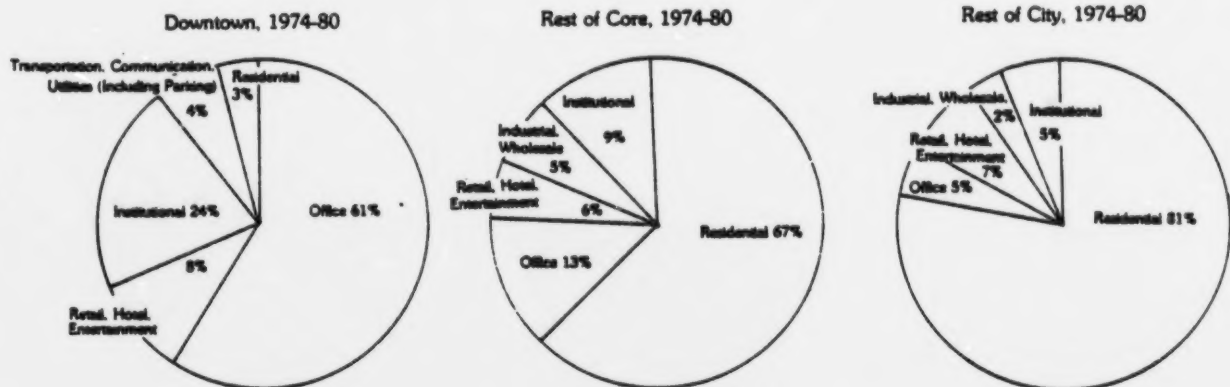
In addition to amount, the kind of investment which occurs also varies significantly with distance from the core. In the downtown, 70 to 80 percent of recent dollar investment has been in office or office-like institutional buildings. The 24 percent institutional slice shown in Figure 4 is almost entirely in one project, the provincial government's Robson Square, which of course is mostly offices.

In the rest of the core outside the downtown, investment in residential uses predominates, constituting nearly 70 percent of the dollars spent between 1974 and 1980. Office uses, concentrated in the central Broadway area, make up only 13 percent of the total and institutional is the next largest category at 9 percent.

Development in the rest of the city outside the core is clearly dominated by residential investment, 81 percent of the total. In the remainder of the city, commercial and industrial uses constitute less than one-fifth of the new investment.

Interestingly, the percent of investment occurring in the retail, hotel, and entertainment sector varied little from one part of the city to another. It starts at 8 percent in the downtown, declines slightly to 6 percent in the remainder of the core, and then rises a bit to 7 percent in the outer parts of Vancouver. While certainly a greater absolute amount of new buildings occurs within that sector in the downtown, it is not as disproportionately large at the centre of the city as one might have expected. In fact, retail use in the downtown appears to have levelled off at a substantial but only marginally growing level. Growth which is in pace with general regional growth and does not indicate a marked comparative advantage for the downtown.

Figures 4, 5, 6
Percent Distribution of Dollar Investment by Principal Use
Completed Buildings, Additions, and Renovations



If one had to simply characterize core change, then, one would say that it is marked by an increased concentration of new office construction in the downtown, surrounded mostly by residential investment in the remainder of the core and in the rest of the city. There is, as well, some subsidiary office, institutional, and commercial interest in the remainder of the core, but this investment pales in comparison with the downtown office boom, which in itself accounts for about a quarter of all construction investments in Vancouver over the 1974 through 1980 period.

The increasing prominence of the office sector in downtown Vancouver is echoed by Figure 7, which plots downtown business licences issued by type of firm in 1966, 1971, and 1980. The most startling part of this graph is, of course, the phenomenal rise of office-consuming business and professional services, the firms which process information and which provide various forms of assistance to other businesses and governments. Between 1966 and 1980 the number of downtown firms in this sector rose by 139 percent, or a whopping non-compound rate of 10 percent per year. Surpassing retail and wholesale trade in the early 1970s, service to business is now, at least in terms of absolute number of firms, the most dominant sector of activity in downtown Vancouver, constituting nearly 40 percent of all currently licenced businesses.

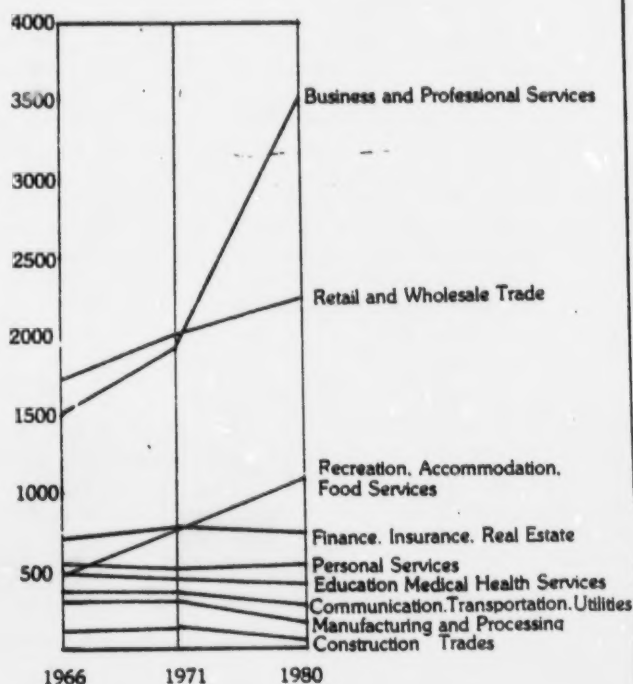
Retail and wholesale trade now runs a distant second at 27 percent of all downtown firms. This reflects a considerable change from as late as 1971 when trade was still the dominant downtown activity. In contrast to the more-than-doubling of the business services sector, trade has grown by a moderate 31 percent since 1966 or only a little better than 2 percent per year.

All other sectors, with the exception of one, have declined or grown only very slightly. The one exception is recreation, accommodation, and food services. While only making up about 11 percent of the firms in the downtown in 1980, this sector has doubled in size since 1966. For more on this activity see the article on Core Amenities.

Of course, a complete analysis of economic change and investment in the downtown and the core would look at more than just the number of firms; it would analyze employment and sales revenue as well. Unfortunately good, accessible data on these is lacking at the moment. We do, however, get a very clear message from the limited data which we do have available. More than ever the future of Vancouver's core is tied to the future of those frequently arcane tertiary and quaternary economic activities which occupy office space. Change in this sector is at the heart of our Coreplan review.

— Ted Droettboom

Figure 7
Firms (Business Licences) by Type
Downtown Peninsula, 1966, 1971, 1980



Amenities in the Core

The Coreplan study involves projections of past and current trends in order to identify possible future developments over the next twenty years. Our aim in this article is to present the quantitative changes which have occurred in a sample of core amenities from 1960 to 1980. The data can be imagined as a kind of time-lapse assessment of selected urban amenities, the function of which is to demonstrate, in a 'then and now' fashion, changes which occurred over the past twenty years. It would not be unreasonable to anticipate that a similar degree of change is possible in the next twenty years.

What Kind of Things Make Life in an Urban Environment Easier and More Pleasant?

The term amenity in the context of this article is meant to refer to those features and opportunities offered by a city like Vancouver which make life more pleasant for its inhabitants. We call them urban amenities because they give pleasure to people who enjoy the quality and choice of activities that only a major city can offer. By their nature, amenities are somewhat subjective and can include very subtle relationships. A view between two tall buildings, catching a bus to the beach, or a choice of 21 different movies, 6 plays, 2 concerts, 37 night clubs, or 34 pubs on a given Saturday night all represent distinct urban amenities.

The subjective nature of amenities makes the task of identifying the urban amenities in Vancouver's core a difficult one. For the purpose of this preliminary examination, amenities were selected on the basis of availability of information and with the intention of reflecting the diversity of interests of Vancouver residents.

The amenities selected have been grouped into three major categories: social and cultural amenities, built form amenities, and natural amenities. Social and cultural amenities generally present themselves as opportunities for activities in a social context. These opportunities may be as a result of a single event such as a concert, an event with repeated opportunities such as a play or movie, or a facility which provides the opportunity on a continuous basis (swimming pools, skating rinks, tennis courts).

Built form amenities present some of the most subtle and least quantifiable urban amenities. Some of the built form amenities we wish to investigate include sunlight penetration and shadows, landscaping, view preservation, pedestrian pathways and weather protection, land use mix, and the relation of ground-level land use to human scale. Investigation into these relationships will proceed as the Coreplan work continues. For this article we present a visual analysis of the dramatic changes in the overall form of the core's built environment as reflected by the redevelopment maps and the photographs of the downtown skyline in 1960 and again in 1980.

Natural amenities can be seen as those things of value which were here before the city: the mountains, the beaches, the waterways, the vegetation. How has urban development hindered or enhanced public enjoyment of Vancouver's unique natural setting? Analysis of the development of open space, planned public access to waterfront areas, and water and air pollution are used as indicators of change in natural amenities.



Social and Cultural Amenities

Given that social and cultural amenities were seen as opportunities for pleasurable activity in the core, the approach was simply to take a count of these opportunities at three points in time: 1960, 1970, and 1980. The time frame problem of comparing single events, recurring events, and year-round facilities has been dealt with by selecting one appropriate period in each year to establish the range of opportunities. For example, the number for concerts in 1960 is the number of concerts occurring in the core during one specific week in 1960, the number for movies for 1960 is the number of different movies playing in the core on the Friday night of that week, and the number of library branches is the number of branches located in the core listed in the 1960 telephone directory.

The sample of social and cultural amenities chosen is broken into five sub-groups: cultural resources, entertainment opportunities, recreational facilities, services, and one, for lack of a better name, we call 'eat, drink and be merry'. In each case the items making up the category are graphed together. To determine the quantitative change of an amenity over time, simply compare the length of the respective bar for each of the three years.

The first category, cultural resources, represents opportunities for enrichment. This category includes the number of library branches, museums, and art galleries. Growth in the number of galleries appears to be largely the result of the increased diversity and specialization of types of art outlets.

The second category, entertainment opportunities, includes concerts, plays, movies, and major sports events. The increase in the choice of movie opportunities between 1970 and 1980 is mainly a result of the trend to split large old movie houses into multiple smaller cinemas. A good example is the Capital 6 which now offers six different movies whereas in 1970 it offered one.

Recreational facilities are an amenity group containing community centres, swimming pools, skating rinks, and tennis courts. Community centres may include any of the other three facilities and this overlap should be understood in interpreting the graph. The graph shows that there appears to have been a continuous and regular growth in the number of recreation facilities over time. Marinas can also be considered as a recreation facility; however, rather than graphing their growth they are shown on Map 2 as lost or gained facilities.

The fourth amenity is services. This category includes doctors with specialization as an indicator of the level of health services, the number of public schools, and the number of churches. Note from the graph, the relatively constant number of public schools over the past twenty years.

Amenities for the bon vivant, the final category, 'eat, drink and be merry' is comprised of restaurants, public houses, and night clubs/cabarets. As the graph shows, Vancouver's core has experienced a prolific increase in the number of restaurants over the past two decades.

Amenities in the Core

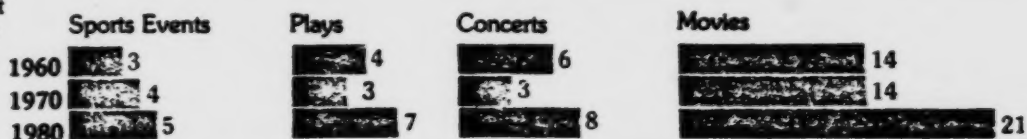
cultural resources

1



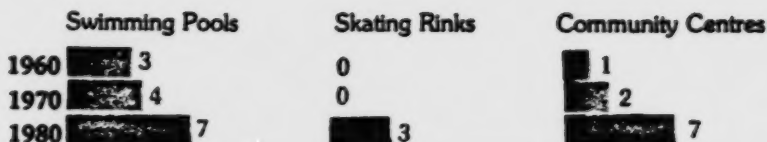
entertainment opportunities

2



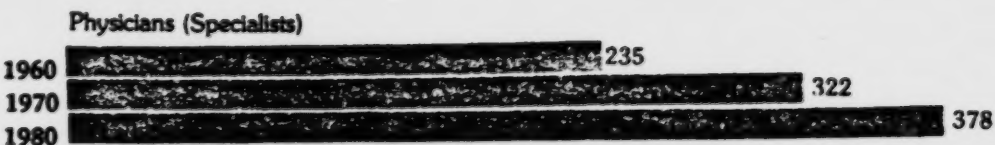
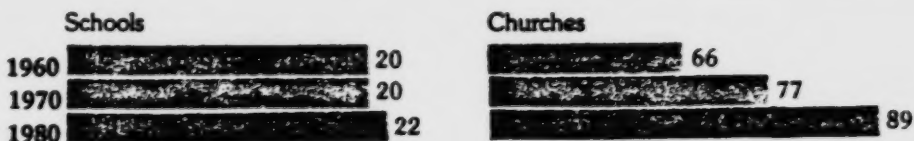
recreational facilities

3



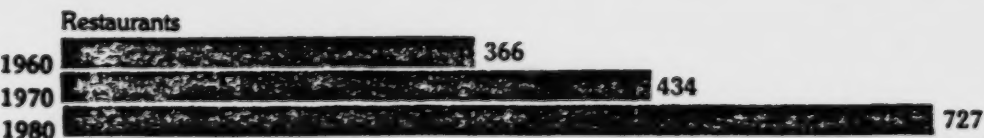
services

4



'eat, drink and be merry'

5



Built Form Amenities

What is the experience of communication between a building and the people who move in, through, and around it? Why are some spaces created by buildings pleasant and inviting, others cold and hostile? What is good architecture? The answers to these questions involve many subtle factors which require a much more in-depth analysis than there is space for in this article. In keeping with the quantifiable approach of the social and cultural amenities, we present a couple of indicators which demonstrate on a gross scale the amount of change in the built form of the core since 1960.

Properties within the inner area of the core which have been redeveloped since 1960 are shown on Map 1. The coloured shaded areas indicate for the 1960s, sites where buildings were: (a) demolished and the sites redeveloped, (b) demolished and the sites left vacant, or (c) structurally renovated. The black areas on the map indicate the same types of redevelopment undertaken in the 1970s.

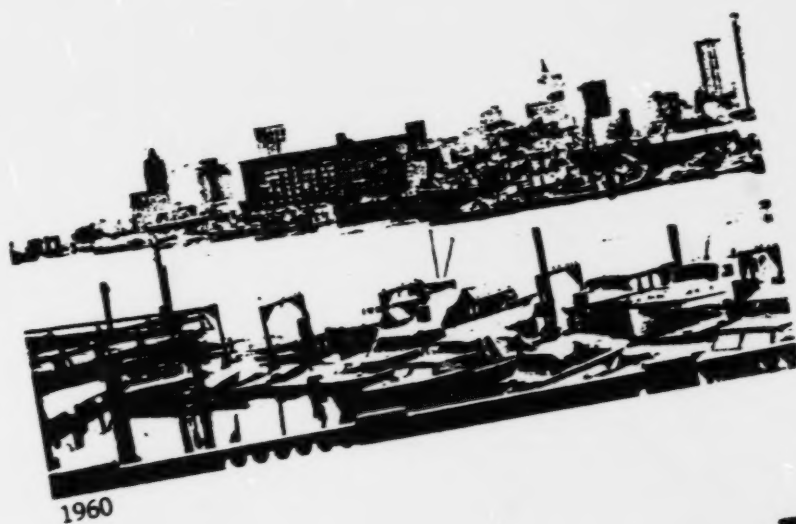


Redevelopment in Vancouver during the 1960s and 1970s.

Map 1

The map illustrates the massive redevelopment of the West End and Kitsilano in the 1960s, and the subsequent large scale redevelopment in the downtown and False Creek in the 1970s. The strongest message the map reveals however, is the extent to which land in the core has been redeveloped over a period of twenty years. Are we prepared to deal with a volume of redevelopment of at least this magnitude during the next twenty years?

This redevelopment has had a major impact on the form, scale, and feel of the core. The two photographs, one taken in 1960 and one taken in 1980 show clearly the dramatic impact of development over the period. The skyline of a city is significant in establishing the image of a city in the minds of its residents and visitors. One has only to return home by road or by rail after a long vacation to appreciate the significance of the skyline as a symbol of "where I live".



Natural Amenities

Because natural amenities have traditionally been treated as externalities in development considerations, they are particularly vulnerable to compromise. Vancouver may be unique or advanced in its appreciation of concern for protecting the beauty of its natural setting.

During the last twenty years there have been increases in both public open space (parks) and public access to the waterfront. Map 2 locates the gains and losses which have occurred since 1960 to the present. There have been approximately 34.5 hectares (85 acres) of park space and 4.5 kilometres (2.8 miles) of public waterfront access added to the core. The development of the north shore of False Creek is expected to add to this trend. Growing awareness of the interaction of the built landscape and its waterfront is evidenced by projects such as the Vanterm public viewing area which provides citizens with an opportunity to watch Vancouver's harbour in action.

The value of waterfront access as an amenity depends considerably upon the quality of the water. Since 1960 the GVRD has built three sewage treatment plants, and Vancouver's beaches are now regularly monitored for pollution. In 1958 there was a general closure of Vancouver's beaches due to unacceptably high bacteria counts. Water quality has since improved in many areas although the water in English Bay has continued to be somewhat of a problem with the most recent closure of Sunset Beach being in 1978.

Clean air in an urban environment could be considered an amenity. Air quality with regard to particulate matter has improved substantially since 1960. This is due primarily to industrial migration out of the city, anti-pollution legislation, and the use of 'clezner' fuels.

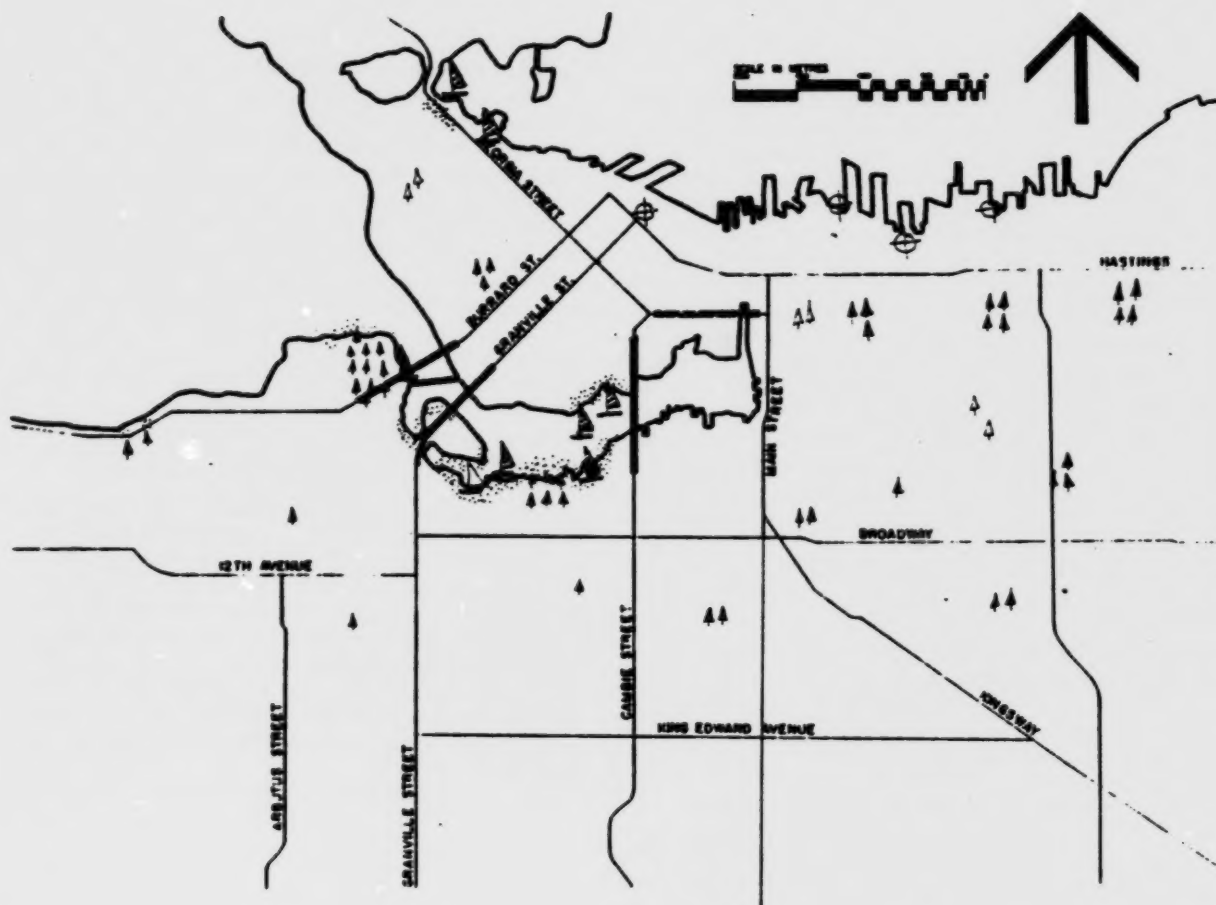
The Vancouver City Planning Commission's *Goals for Vancouver* contains goals which pertain to park space, public access to waterfront, and air and water quality. The trends as indicated by the above description indicate that Vancouver has been moving towards fulfillment of these goals.

How Are Amenities Changing?

Our intent has been to present basically raw data in the way an impressionist painter puts pure pigments on a canvas. A picture emerges through one's knowledge of the changes in the city over the past 20 years. This knowledge is necessary to evaluate the changes in amenities in the core since 1960. Is the growth in amenities a real growth or has the parallel growth in population in the region actually decreased opportunities per capita? It is possible the increased demand for transportation facilities and parking has made the core amenities less accessible? Our data can only give a picture of how the number of amenities has changed over time. The context of how much enjoyment is derived from these opportunities cannot be known without surveying the people who seek those amenities in the core.

We ask you to complete the picture of the change in core amenities from your own perspective. You probably have your own mental list of urban amenities. What things in the core make living in Vancouver pleasant for you? Take a minute to reflect back twenty years (if you were here then). Have some of the things that gave you delight then been lost in the city's growth? Do you find more to enjoy in today's Vancouver? Considering the anticipated growth in the core in the next twenty years, is Vancouver getting better or just getting bigger?

— Lynda Challis, Glen Morrison, Greg Zala



1960-1980 The Loss and Gain of
Parks, Marinas, Waterfront Access,
Observation Points.

Map 2

Parks:  Gains

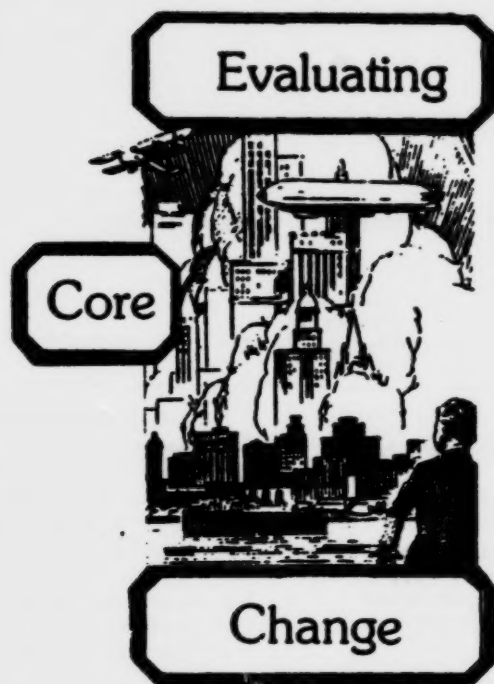
 Losses

Waterfront Access:  Gains

Marinas:  Gains

 Losses

Observation Points:  Gains



In this and the past two issues of the *Quarterly Review*, we have explored the nature of future core employment growth and the implications of this growth for housing, transportation, and amenities. While some of this work is preliminary and incomplete, we do have a rough outline of the trajectory of change that the core may be on and the kind of city that Vancouver might be by the end of the century. Will this future city live up to our collective expectations and desires? Will future change take us closer to or further away from the kind of city we want to live in?

The only formally expressed set of goals or desires against which we can evaluate change is that provided by the Vancouver City Planning Commission (VCPC). In 1977 City Council revised the responsibilities of the VCPC and instructed it to find out citizens' opinions and ideas about the future of the city, and prepare a set of goals to guide community decisions about that future. Using information provided by a number of questionnaire surveys, the VCPC drew up a set of goals that were published in February 1980 as a report called *Goals for Vancouver*. While these goals are not final and will be modified through analysis and public discussion, they can be used as a statement of the types of future change that Vancouver residents see as desirable.

In order to use them as a yardstick, the goals have been refined in consultation with the VCPC. Some goals have been rewritten to clarify them while others have been subsumed within more general goals. In addition, two types of goals have been dropped out of this preliminary analysis: (1) those that are essentially unaffected by the rate or nature of urban change, such as an accessible system of justice, and (2) those that may be only indirectly affected by change. These indirect effects may occur because municipal and provincial resources are limited, and expenditures on core projects and servicing core development may absorb resources that may be needed to attain other goals. It is possible, for example, that maintaining the present level of city utilities or expanding library services may not be possible given other capital commitments. These indirect effects need further consideration as part of the broader question of the opportunity costs of public expenditures related to core development — the opportunity costs of these expenditures are the lost benefits that could have been gained by using those resources in other ways.

This modified set of goals, grouped according to the element of the city that they refer to, is shown in the table together with an indication of the impact of projected core change on each of the goals.

Goals for Vancouver and the Effects of Core Change

GOAL	Effect of Projected Changes
EMPLOYMENT	
• Provide more and varied (white and blue collar) employment opportunities.	+/-
• Support job development not only in the city itself but also on a regional basis.	-
• Encourage growth where it will lead to the expansion of housing and employment opportunities but ensure management of such growth so that the quality of life and character of the city are maintained.	-
DOWNTOWN ACTIVITIES	
• Expand transit and transportation, port and trade, and cultural activities in the downtown as top priorities.	+/-
• Promote entertainment, hotel, and tourist activities as a second priority.	+/-
TRANSPORTATION	
• Reduce time spent travelling to work.	-
• Maintain the current ease of travelling for pleasure and for shopping.	-
• Make public transit to all parts of the city a priority in the development of future transportation in Vancouver.	+/-
• Reduce traffic congestion through better use of existing roads and facilities.	-
• Reduce the heavy truck traffic in the downtown.	?
• Reduce the volume, noise, and other detrimental effects of truck traffic through residential areas.	?
HOUSING	
• Increase the choice of housing types, tenures, price, and locations.	-
• Maintain and expand opportunities for child-rearing families to live within the city.	-
• Provide lower priced housing alternatives for the elderly.	-
• Locate multiple housing within nearly all areas of the city.	-
• Distribute a fair share of housing types (seniors, moderate income, etc.) in the most appropriate places throughout the city.	-

GOAL	Effect of Projected Changes
NATURAL AND BUILT ENVIRONMENT	
• Preserve the unique character which already exists in many Vancouver neighbourhoods.	-
• Preserve and enhance the character of unique commercial areas in the city.	-
• Improve the pedestrian environment throughout the city.	+/-
• Achieve high quality building design in the downtown.	?
• Protect selected views of the mountains and waterfront and in particular views from downtown street ends and the Granville and Burrard Bridge approaches.	?
• Increase public access to the waterfront.	+
• Preserve the remaining agricultural lands within Vancouver and the region.	-
• Improve the water quality of the Fraser River, English Bay, and the harbour.	-
• Reduce air pollution caused by industry and by autos.	+/-
RECREATION	
• Provide a diversity of recreational opportunities.	+
• Provide a variety of park sizes, locations, functions, and characters.	+
ENERGY	
• Reduce energy consumption.	+/-
CITY GOVERNMENT	
• Ensure that business and property taxes do not increase drastically.	?

Employment

Although the number of jobs within the city is likely to increase substantially, the diversity of employment opportunities is likely to decrease. Most of the increase will be accounted for by office employment although jobs in personal service activities are also likely to increase. Industrial employment in the city is likely to continue declining partly as a consequence of displacement of industrial uses from the core by commercial activities.

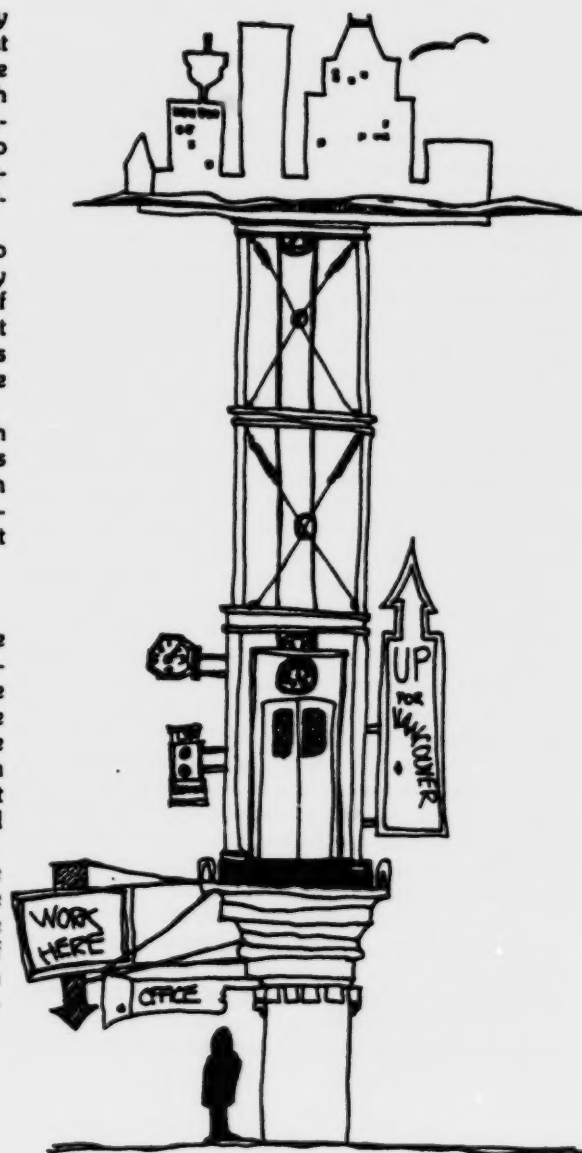
Increased employment opportunities do appear to be an important goal but that goal can be satisfied by employment growth within the city or within the rest of the region. As growth of the total regional employment pie is limited, job development in the rest of the region is likely to be negatively affected by continued office growth in the core.

In addition, it appears that employment growth within the city has less priority as a goal than goals related to the quality of life and character of the city. In one of the VCPC surveys, eighty percent of the respondents were not willing to accept economic growth if it reduced the quality of life or character of the city.

Downtown Activities

All of the activities mentioned are likely to increase within the downtown peninsula with the possible exception of port activities. These may change in nature and may even decrease with the development of the north side of False Creek, Pier B-C, and eventually the rest of the central waterfront. Some of the increase in entertainment and tourist activities will be the direct result of facilities planned for the B.C. Place site and Pier B-C.

Increases in these activities however are likely to be minor compared to the projected increase in office activity, and according to the goals, downtown office growth is at best a third priority. In fact, sixty percent of respondents in one of the VCPC surveys were not in favour of any growth in the level of business and financial activity in the downtown.



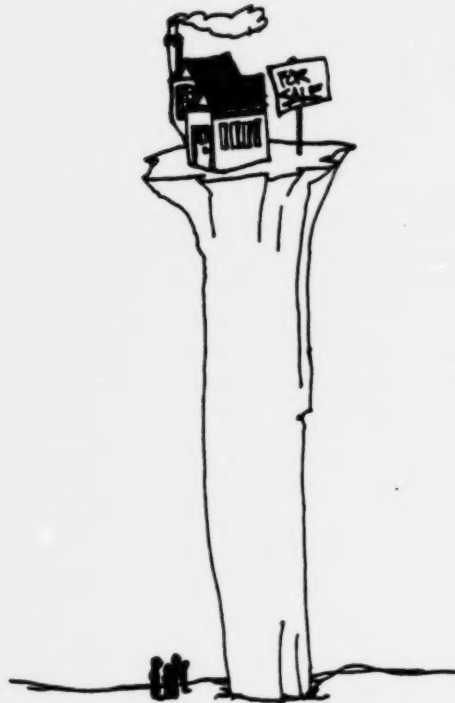
Transportation

The goals related to transportation involve not only desires about the relative ease of movement within the city but also the means through which travel demands should be satisfied.

The average time spent travelling to work is likely to increase rather than be reduced. Downtown employment growth, together with limited housing capacity in the city and the high cost of existing housing, will produce substantial increases in peak flows into both the city and the downtown and will increase the average distance travelled to work. Those living close to rapid transit stations or to feeder routes to those stations may experience some reduction in travel time. In general, however, journey to work times are likely to increase as road congestion and the distance between home and downtown workplaces increase. Travel for pleasure or for shopping is likely to become more difficult if it takes place during the day and particularly if the downtown is a destination. Traffic and parking associated with evening events at the stadium will also reduce the ease of travel to and within the downtown outside of normal working hours. Finally, construction activity and the visitors expected to Transpo may cause temporary but substantial travel delays.

Construction of ALRT will mean a substantial increase in the capacity of the public transit system but only some areas of the city will benefit from this, and the investment required for ALRT may preclude major investments to improve public transit service in the rest of the city. In terms of the road system, no major expansions are planned with the exception of those for the B.C. Place site and Pier B-C. Some road management improvements will take place but current plans are unlikely to have substantial impacts on capacity. As traffic congestion increases, it is likely that there will be at least as much pressure exerted to expand the road system as to implement radical road management policies.

The impact of change on heavy truck traffic in the downtown and truck traffic in residential areas requires further study. Removal of warehousing and industry from the core to suburban locations may reduce heavy truck traffic through the downtown but may lead to increased medium and light truck traffic in the city.



Housing

Increases in housing prices over the last year or so have created a substantial redistribution of wealth and produced a situation where housing is beyond the means of many potential first-time home buyers. Vacancy rates for rental units are low and rents are increasing. Projected employment growth in the downtown, reinforced by the increasing cost and difficulties of commuting, will mean continued pressure on the city's housing stock. This pressure is likely to be reflected in high costs for accommodation and reductions in the stock of rental housing, particularly low-cost housing, as it is redeveloped or reconverted. Price and tenure choices will be reduced, and young families and low-income residents are increasingly likely to be priced out of the city, with those who continue to work in the city being faced with a long and increasingly costly journey to work. However, in the longer term these impacts may have feedback effects on employment growth in the city, and perhaps the region, in that

decentralization may become more attractive to firms.

The other housing goals refer to the location of different types of housing. Under the existing zoning, medium and high-density housing is largely restricted to the core. In the rest of the city residential development is largely limited to low-density single-detached use. Unless policies shift dramatically and major changes are made to the present zoning, the housing goals related to the distribution of housing types will not be met. Rezoning initiated by developers are likely to continue but as the outcomes of rezoning applications appear to be based partly on the amount and nature of neighbourhood opposition, this type of zoning change is unlikely to further the goals.

Natural and Built Environment

The goal of preserving neighbourhood character implies a relatively slow rate of change and redevelopment that is compatible with neighbourhood characteristics in terms of design and type of housing. Assuming no change in policy, inner city areas will continue to experience considerable redevelopment and social change. In other areas physical change may be limited but the social character is likely to shift as the more affluent replace the existing residents.

Increasing development pressure in areas such as Yaletown, Chinatown, and Gastown may make preservation increasingly unprofitable. Even if the physical structure can be preserved, the mix of uses may shift as rentals increase.

Improvement of the pedestrian environment involves enhancing the safety, comfort, and stimulation provided by that environment. While the redevelopment on the north shore of False Creek and the central waterfront could result in an enhanced environment in those areas, the pedestrian environment in the rest of the core, particularly the downtown, is likely to deteriorate largely as a result of increased traffic volumes. Improvements can be achieved through regulation and public investment, but the rate and scale of projected development may act against adequate regulation, and the public purse is limited.

The rapid pace and scale of development may also operate to hinder the achievement of the goals of high quality building design and protecting views in the downtown. Existing powers appear to be adequate to

achieve these goals but enforcement would require a very strong will and the allocation of sufficient resources and care to reviewing proposals. In addition, B.C. Place does not have to comply with City regulations (though cooperation is expected) and the high-density developments proposed for the site could eliminate some bridge-end views. However, the redevelopment of the north shore of False Creek and the central waterfront will substantially increase public access to the waterfront.

If present policies continue, most of the agricultural land within the region may be preserved but suburban residential expansion will continue to exert pressure on that land. Water quality may be improved as the result of the clean-up of False Creek but improvements in sewage treatment facilities may be slow given the funds committed to large public investments in core projects and servicing core growth. Air pollution created by industry will decrease as industry is displaced from the city but traffic congestion may contribute to increased pollution.



Recreation, Energy, and City Government

Core development in the past has increased the variety of recreational opportunities and is likely to do so in the future. New parks should result from the comprehensive redevelopment of the north side of False Creek and the Central waterfront.

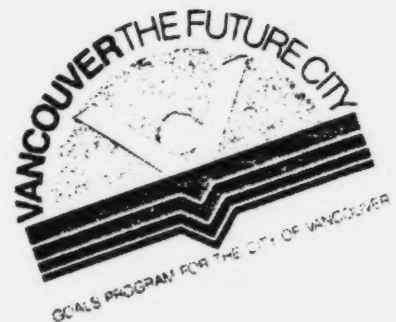
Energy consumption in the city may be reduced as people adjust to higher energy price levels by methods such as driving smaller cars and improving home insulation. However, the increasing distance between work-place and home together with traffic congestion, will have a counteracting influence.

The level of future city taxation levels will depend on a number of factors including provincial policies on services and funding. Core development will increase the property tax and business tax bases so that the City would be able to raise more revenue without increasing tax rates. However, core development will also require increased expenditures and the balance between the two has not yet been estimated.

This preliminary evaluation of core area change indicates that there is not a close match between projected change and public desires, or at least public desires as expressed in the VCPC Goals for Vancouver. As priorities have not yet been attached to the different goals and as the effects on each goal have not been quantified, the gains and losses cannot be added to give an overall evaluation of our projected future. But the number of mismatches between desired changes and projected changes is high enough to indicate that some action is necessary. It is possible that the goals that this evaluation has used are not an accurate expression of what the community wishes to become and consequently the goals should be reformulated. But if the goals are valid, then we need to consider ways or policies to alter change so that it produces a city closer in nature to the one that we would like to live in.

Of course the future we have evaluated may not materialize even if current policies remain unchanged. After all we cannot be sure what will happen in the future and the further forward in time that we look, the more uncertain we become about the likely nature of that future. But decisions have to be made now and if we do not try to anticipate future change, then we may have to live with future change no matter how acceptable or unacceptable it may be.

— Paul Raynor



Five Futures for the Core

In recent issues of the *Quarterly Review* we have described what has happened and what is happening to the Vancouver core, how it is likely to change in the future, and how that change might affect the surrounding city and the region. We have also suggested how that change relates to people's aspirations for their city as expressed through *Goals for Vancouver*.

We have noted some good results from core change. We have also identified some substantial worries: some significant imbalances between the rate of change in the core and that in the remainder of the city, and some deficiencies in the public services needed to serve core growth — particularly transportation. Of most concern, we have identified a very likely future for Vancouver and its core which we feel many, if not most, Vancouverites would not have chosen. The most probable outcome of current trends seems to be a less livable, less affordable city, characterized by rising transportation and housing costs and by growing economic and social disparities.

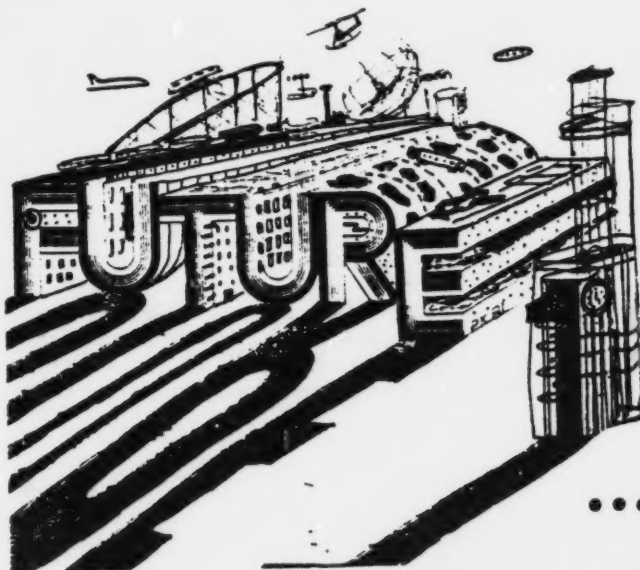
So what do we as a city do if we do not like the direction we are heading? One way of starting to do something is to identify some clear alternatives to the current direction, to evaluate the desirability of these relative to the trend and relative to one another, and then to choose one or a combination as a new target for core and city change. This target, this alternative future, would be the guiding principle around which public policy regarding growth and decline would be organized. It would be the rough overall vision toward which our public capital investments would build, and it would be the direction in which our development regulations and fiscal mechanisms would redirect private change.

Naturally, the new target will probably never be actually achieved. Uncontrollable and unknowable events and circumstances will arise to thwart our progress. The assumptions under which we first established our goal will alter. As we proceed forward, changing and learning more about ourselves and our city, we may identify new, seemingly more desirable objectives and bend our path toward these. We may approach dead ends and have to turn back. We believe, however, that navigating the future toward some identifiable overall objective or objectives is preferable to merely blowing with the winds of change, that anticipating and directing

change for public purpose is less disruptive and more efficient (though not necessarily easier) than dealing with its unintended consequences after the fact.

As a first rough basis for public choice about the intended future for the Vancouver core and its relationship to the city and the rest of the region, we have identified five simple alternative futures. We could have identified fifty or more, but we believe the five we have chosen represent a reasonable range of polar alternatives from which a realistic single or combination target might be selected.

We hold no pretense that the target or targets eventually selected will represent any sort of social optimum in which all the components of change are in heavenly balance with one another and in perfect service of the city's goals for itself. Of course, the target future will be a socially defined compromise, based more on the relative bargaining powers of conflicting interests than on the objective correctness of any particular future state. It would lean more toward those interests in ascendancy than to an overall good. But it would be an explicit, reasoned statement of the city's intent, a concept around which public actions could be organized in a coherent manner. It would, as well, be a clear focus for the continuing public analysis and debate necessary for informing the present about the future.



Future One: The Trend

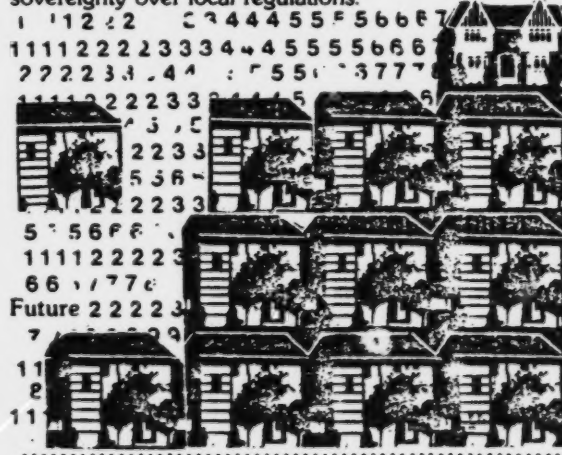
Assuming everything else constant (which it never is), this is where the momentum established by current development patterns and rates, moderated by present public policy, will carry us. It is described at some length in the April *Quarterly Review* and its implications relative to citizen aspirations for Vancouver are explored in the previous article in this issue.

In summary, the trend is this: downtown office employment is growing very rapidly and there is zoning capacity and potential demand sufficient to permit a great deal more growth over the next twenty years (a doubling or tripling of current levels by 2001); housing is developing much less rapidly but city capacity at present densities could be exhausted in about ten years and regional capacity in about twenty; transportation services in the downtown are already strained and at present rates of employment growth are likely to get considerably more strained in spite of added transit capacity; planned capital expansions to the transportation system appear inadequate for the projected demand.

The immediate result of this trend, over the next decade or so, is that a relatively small number of increasingly affluent city residents will continue to enjoy ready access to an ever larger, ever more active core, while growing number of core employees struggle into the centre from ever more distant suburban locations over increasingly congested regional transportation facilities. Everyone but the very-long-established will experience higher housing prices, but many of the region's newer, younger, and less-well-to-do residents will have the double liability of both higher shelter costs and higher commuting costs. New retail uses and other regional amenities will follow residential growth to the distant suburbs; while in the core more slowly growing retail, recreational, and personal service functions will become increasingly specialized, catering to a daytime office population or to higher-income city dwellers and tourists.

Eventually, perhaps by the 1990s, we expect this trend to be self-limiting. In fact, we already are beginning to see some evidence of self-limitation as employees turn down transfers to Vancouver because of housing costs, and as employment centres spring up in places like Richmond partly in response to the difficulty of downtown commuting. However, we expect

self-limitation to be socially more expensive than a planned approach to growth distribution and balance. This is for two reasons. First, private sector developers are unlikely to be fully sensitive to transportation, housing, and other social costs in their investment decisions. Such costs are externalities not included, for good reason, in the private investment calculus. As a result, from a social cost point of view, new office space in the core is likely to be oversupplied and self-limitation will occur too late — only after external costs have become intolerable to a significant segment of the population. Second, limitation will be further delayed because the market tests which normally govern private development are being grossly distorted by large-scale public developments such as B.C. Place. This development is itself relatively insensitive to market tests because of various subsidies (both overt and hidden) and because of special powers, such as expropriation and crown sovereignty over local regulations.



Future Two: The Dense Urban Centre

One response to the trend is to take continued massive employment growth at the core as a given and reshape the rest of the city accordingly. Through adjustments in the housing stock and in the intra-city transportation system, this intended future would aim to structure the entire city to serve continued economic growth and attendant employment increases at lowest public and social costs.

There would be a thrust to accommodate much more population and many more households in Vancouver. New households would be introduced by increasing housing densities through redevelopment and infill throughout the city. Ultimate density would be largely determined by how big a core we chose. As there would be a need to accommodate a wide range of urban household types, new residential development could range from highrises at special high-amenity locations to townhouses, patio homes, and other cluster development spread across the present single-family housing areas.

However, because of demographic trends toward an increasingly middle-aged population, emphasis would be on change to the single-family areas. Although families will be smaller, there will still be a strong demand for family-oriented housing. This could be accommodated by marginal increases in density throughout the three-quarters of the city which is presently in low-density single-family use.

Some additional housing density also makes sense around transit stations; but it needs to be remembered that during the peak period the rapid transit vehicles will be nearly two-thirds full by the time they enter Vancouver. The per-hour capacity of the planned first phase system is only twenty-five thousand per hour, so there is limited room for new transit riders generated by station area residential development.

For this future, it would be wise to contemplate a program of transit improvements aimed at increasing penetration within the newly dense urban area; that is, an urban transit system in addition to the presently planned suburban one. Such a system, composed largely of busses and trolleys but perhaps including some new people-mover technology as well, would be directed at substantially improving transport efficiency within the city, providing a viable alternative to the private automobile, and reducing the need for core employees to compete for ever-diminishing street capacity.

New retail and service uses would follow increased population to the city, and in general Vancouver would become a much more active, varied, and vital place. It could take on the more urban and urbane feel one usually associates with a large, world city. This could, however, be at the expense of some, or maybe even

most, of Vancouver's existing character and style, particularly its physical form and its more leisurely west-coast rhythm and pace. As the goals program indicates the present quality of Vancouver to be quite precious to many residents, this future needs to be considered very carefully.



3 Future Three: Smaller is More Beautiful

In this version of Vancouver's future, preserving something approximating the existing quality (broadly defined) of the entire city, especially of its residential neighbourhoods takes preeminence. The prime public objective underlying this future would seem to be conservation, though the same future might be generated by a fiscal and overall economic argument which contends that the existing city or only a marginally larger city is preferable from the standpoint of net social cost or benefit; that is, that a very large centre would cost more to service than the social and economic benefits derived.

The heavy hand of this future compared to the trend would be commercial growth control or limitation at the centre. The same sort of strongly counter-trend development controls which preserve the existing scale of single-family areas could be applied against the commercial development pressures in the core. A reduction in employment growth capacity or a much decreased rate of growth would permit the remainder of

the city to stay pretty much as it is (at least in physical form) and would reduce public expenditures on radial transportation facilities and in other urban services required for density. Displaced employment growth and commercial facilities could find their way into regional town centres, dispersed suburban locations, or other economic regions depending upon the regional planning context in which this future takes place.

Obviously, if Vancouver decided to seriously limit employment growth at its centre, an appropriate regional plan would be vital. Like it or not, Canadian cities seem still dependent on economic growth for economic health, and a strategy which displaced too much growth from the region could prove highly undesirable.

Growth limitation would, as well, have to deal with a substantial moral/ethical dilemma. How would the rights of those who are not yet here but who want to live and work in this most desirable place be respected? What gives those who are here now the right to pull the drawbridge up over the moat and prevent others from entering? But then again, how do we preserve this idyllic Camelot, when its very attractiveness is apparently self-destructing?

perhaps densifying suburbs. The transportation facilities may be either transit or roadways, though the latter imply a different scale and character of change in the core because of the necessity of providing parking capacity.

Traditionally, as a city and region we have tended to reject this future because of the very heavy public capital requirements, the assumed environmental difficulties with the transportation facilities, and the conflict between regional expansion and farm land preservation. However, recent government investment decisions suggest that the capital problems may be more associated with priorities than with absolute resources, and it is not clear that the social and environmental costs are any worse than those experienced under our current non-strategic approach to the growth problem.

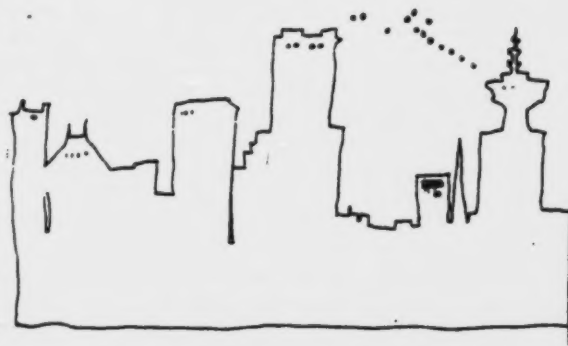
Is the noise and safety situation on First Avenue or Twelfth Avenue or any other number of heavily travelled residential streets clearly preferable to planned freeways? Are the current trade-offs between public transportation expenditures and individual housing costs acceptable? Do we have to preserve farm land in urban areas thus potentially affecting the supply and affordability of new housing, or would it be socially more efficient to undertake massive capital expenditures to make non-urban land more agriculturally productive? Frankly, we do not know, but if other futures cannot be made to work we ought to find out.

Future Four: Regional Expansion



FFFFFFFFFUTURRRRE FOURRRRRR

In this future the downtown is allowed to grow, while residential densities and character in the remainder of the city are more or less maintained. This neat trick is accomplished by increased spending on regional-scale transportation facilities which whisk commuters in from ever outward-expanding and





Future 5: Micro-electronics and the Mini-core

Our final future recognizes the revolution in urban spatial structure which accelerating changes in information-processing technology will permit, and which increasing transportation, energy, and real estate costs may force. The largest and fastest growing segment of the core employment base is engaged not in the exploitation of natural resources, not in the manufacture of consumables, not even in the provision of direct consumer services, but in the processing and utilization of information, ranging from financial records to engineering analyses. This post-industrial economy is now beginning to experience its age of mechanization with potentially earth-shattering results for the future of cities like Vancouver. The micro-electronic chip and its associated communications' advances (e.g., fibre optics, satellite transmission, etc.) could turn Vancouver upside down.

Put simply, there is very little reason why the employee of the future should have to spend two hours in traffic burning precious gas so that he can sit at an input terminal and spend the day communicating with a computer in Chicago. He could do that at home, or at least at a location nearer home. In a future containing rising energy prices, high land costs, a preference for suburban life styles, a dispersing of population, and a phenomenal communication technology, it may be a good deal cheaper and more efficient to transport the work to the employee than the employee to the work.

We could then envision a core accommodating in its office towers only the elite decision-makers who out of tradition or psychological need require face-to-face contact. Their support staff, the clerks, the analysts, the designers, could be dispersed all over the Lower Mainland, the Island, and who-knows-where else, connected by an intimate communication network and supervised through a new technologically-based, less hierarchical, network organizational structure.

It is likely under these circumstances that Vancouver would become a fairly heady place; but some of the pressure for fundamental physical change would abate, providing opportunity for variety to remain as well. However, shifts in employment structure, accompanied by spatial friction and cultural lag, would produce some painful discontinuities and disruptions. Adaptation into a new form of economic organization and a new urban form would initially conflict with old patterns and old styles, and a plan or at least a process of managing change would be needed to ease the transition.

All Our Futures Will Be Difficult

The trend will make life in Vancouver less easy. Alternatives to the trend will require a tremendous amount of public will and political resolve to achieve, especially if they are to be achieved without undue discomfort and disruption and with adequate concern for equity. We will undoubtedly have to find and implement new growth management tools, ranging from taxation policy and other fiscal instruments, to strategic public investments, to better management information, to development quotas, to revised design controls. We will probably have to make some enemies, but if we do it right we will make more friends.

— Ted Droettboom



Planning the Core: The Past Experience

The general aim of the Coreplan is to review present plans and policies for the core and revise them to give the City more effective tools for achieving community goals. This requires a firm understanding of the relationship between goals, plans, and the changes occurring in the core. One way to improve this understanding is to look at the evolution of plans and policies, examining how plans and policies have been revised over the years and the factors which made these revisions necessary.

The First Fifty Years: 1886 — 1936

Vancouver was incorporated as a City in 1886. It had a land area of 2 435 hectares (9.3 square miles), a population of about 1 000, and boundaries not too different from those of today's core (compare the adjoining map with the one in the article that follows this one).



Vancouver Boundary Extensions

The city grew rapidly but in its first forty years there were no plans or zoning regulations in the city and City Council spent much time trying to reconcile conflicting interests. Between 1922 and 1927, the municipalities of Vancouver, Point Grey, and South Vancouver adopted zoning by-laws. A Town Planning Commission was established in Vancouver in 1926. In 1929 the three municipalities amalgamated to form the new City of Vancouver, the third largest city in Canada. It now had a population of about 228 000 and its land area had reached its present size of 11 318 hectares (43.7 square miles). There were less than 50 000 people in the rest of the region.

In 1929 a "Plan for the City of Vancouver" was published. The plan built upon the established land use and transportation patterns and trends of the time. It called for land uses to be arranged in a ring-like pattern with densities decreasing with distance from the downtown. It also proposed a radial system of streets and transit focused on the core. There was a proposal for a civic centre with a new city hall at the north end of the Burrard Street Bridge.

The plan was not officially adopted but a new consolidated zoning by-law was based on its recommendations. Little else could be done to implement the plan through the economic depression that was to dominate the following decade. In 1936 Vancouver celebrated its fiftieth anniversary with the opening of the City Hall we have today.

In these first fifty years Vancouver became equipped with a basic set of tools for governing itself and for guiding the change with development activity produced. Inherent in these tools were some goals for the city and the core: that Vancouver would grow to become a major city, forming the dominant centre of the region, with a strong focus on the core.

The Next Twenty-Five Years: 1936 — 1961

This period saw the city leave the economic depression of the thirties, go through the Second World War, experience a postwar boom, and sit through the discomfort of stagnation in the late fifties. In the early fifties the establishment of the Planning Department and the Technical Planning Board, the new City Charter, and the new **Zoning and Development By-law** added to or revised the tools available to the City for managing growth and change.

These changes were in part a response to studies undertaken in the late forties to update the 1929 plan. Foreseeing "the city's inevitable expansion and growth", two major problems were identified: first, the cost of new schools, parks, and recreation facilities; and second, diminishing accessibility of the downtown and growing traffic congestion in the downtown. A core-oriented rapid transit system, an expressway from the southeast, and a downtown civic centre were proposed "to improve this vital portion of the city and to make it more accessible and convenient to all citizens in the Greater Vancouver area". By countering the trend to decentralization, it was hoped to avoid high servicing costs. It was also expected that excess tax revenues generated by a healthy downtown could be used to service residential areas and to provide major public facilities such as a public library, museum, arena, and auditorium.

The new City Charter of 1953 gave the City powers to do long-term borrowing for capital projects. The new **Zoning and Development By-law** enacted in 1956 introduced conditional uses, floor space ratios, the development permit system, and the comprehensive development district (CD-1) zoning schedule. In 1955 the Technical Planning Board and the Planning Department, both established in 1952, were given the task of preparing "a development plan designed to meet the needs of the city for a period of . . . twenty years".

In the five years of intensive study that followed, three areas of great concern were identified. First, in the downtown there were problems of congestion, incompatible land uses next to one another, low density and sprawling growth, competition in retail activity

from suburban commercial centres, the unattractive quality of development, and limited parking. Second, in the apartment areas the problems were an excess of land zoned for apartment use, the unsuitability of some areas for this land use, the poor quality of apartment development, the limited amenity of apartment areas, and the shortage of parking space. Third, there was a need to revitalize the role and appearance of residential neighbourhoods such as Strathcona and industrial areas like False Creek.

The decade ended with several legislative and action proposals to deal with most of these issues, but few were adopted and no comprehensive development plan was proposed to Council. National economic growth had begun to slow and this was reflected in Vancouver by declining development activity. Post-war growth had not been as substantial as had been expected, and much of the regional growth occurred in the suburbs outside Vancouver.

The Next Twelve Years: 1961 — 1973

By 1961 office space growth in the downtown had come to a virtual standstill. The retail sector had worsened since the mid-fifties and still more deterioration was feared. Council responded by establishing a Downtown Redevelopment Advisory Board. In 1964 this board produced a redevelopment proposal for the two downtown blocks that were to become the Pacific Centre. Civic initiative to revitalize the downtown and encourage the resumption of retail and office growth had become an urgent priority and was actively pursued in the early sixties.

Meanwhile metropolitan transportation studies and the establishment (in 1965) of the Greater Vancouver Regional District (GVRD) brought a wider scope to civic concerns. In this regional context, a 1966 draft City policy plan on the future of the Vancouver Metropolitan Core decried "continued fragmentation of study" and "plans (that) are not put into effect". It was especially concerned with the need for action on transportation improvements and other measures necessary to stimulate private development activity. However, the proposal cautioned that "the City alone cannot afford the major changes which would provide additional street capacity to cater to growing demands".

This draft plan also failed to be adopted but it would provide an agenda for subsequent planning efforts. In particular it recognized that transportation expenditures would have to be a necessary adjunct of desired office space growth. There were indications that this growth would soon be resumed. Indeed by the late sixties a major office and apartment development boom was underway.

A new planning program was begun in 1967 to prepare a comprehensive development plan to give the City a guide for managing growth on the downtown peninsula under these new circumstances. However, an intense public debate in 1968 over the Georgia Viaduct proposal significantly affected this effort. There was angry public rejection of the freeway idea underlying this proposal and considerable support for a rapid transit alternative.

The plan proposal which subsequently emerged in 1970 outlined five alternative development concepts for the downtown. Half the public response to this plan was in favour of a restricted growth alternative that had been offered as a way of dealing with two possible conditions: "first, if funds are not available to provide the necessary services to major expansion of downtown employment; or second, if it were decided to disperse the downtown's employment potential to other parts of the metropolitan region".

In 1971 Council rejected the restricted growth concept but concurred "that lower densities of development will be necessary to create the amenities in the downtown peninsula supported by the general public". The Planning Department was instructed "to submit a zoning by-law amendment on the basis that transit and transportation will be improved, but dealing with current conditions". Work was not yet completed on this program when a totally new party was elected to Council at the end of 1972 with a platform of civic priorities quite different from those of its predecessors. Among other things it was evident that growth was being allowed with no tangible method or plan to accommodate its transportation demands.

At about the same time, the GVRD adopted thirty policies to deal with regional growth issues and to form the basis for the Livable Region Program which was intended "to manage growth and change so as to maintain or enhance the livability of the Region". Like

the civic election results, this signalled a shift in community values and indicated a wide gap between those values and the City's existing or proposed plans for coping with growth and change.

The Next Three Years: 1973 — 1976

In early 1973, the new City Council expressed concern about the transportation implications of further downtown growth. Downtown office space had almost doubled since 1963, and Council questioned the transportation improvement assumptions of the downtown plan proposed earlier. A new downtown planning study was initiated. Stringent zoning controls were imposed as a temporary measure until new guidelines were adopted.



Planning programs were begun in the West End, False Creek, and the Gastown and Chinatown historic areas. In 1974 local area planning programs were established in Kitsilano, Fairview Slopes, and Cedar Cottage. In 1975 local area planning was extended to Mount Pleasant, Grandview-Woodland, and other areas outside the core.

In very quick succession during this four-year period three official development plans (for the downtown, West End, and False Creek) and many

planning policies were adopted. The development control process was altered with the establishment of the Urban Design Panel in 1973 and the Development Permit Board in 1975. In addition, many zoning by-law amendments were made as a result of local area planning programs in residential parts of the core.

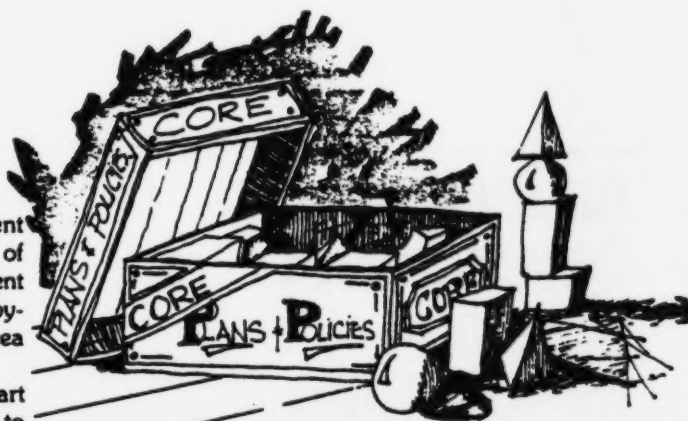
In 1975 City Council endorsed the five-part strategy of the GVRD's Livable Region Program: (1) to achieve residential growth targets in each part of the region; (2) to promote a balance of jobs to population in each part of the region; (3) to create regional town centres; (4) to provide a transit-oriented transportation system linking residential areas, regional town centres and major work areas; and (5) to protect and develop regional open space. In addition to plans and policies already adopted which supported these objectives, Council further amended the zoning by-law to reduce office densities on Central Broadway.

By the end of 1976, only five years ago, the City made firm decisions to encourage the decentralization of employment growth, to encourage housing downtown and in False Creek, to stabilize the residential neighbourhoods in the core, to participate in the development of a regional rapid transit system, and to improve the quality of environment and development in the core.

The City's new plans and policies represented something of a milestone. Very extensive programs of research and public participation yielded major decisions that the City had been trying to make for many years. Based upon broad and generally accepted goals and objectives, these decisions gave the City some specific development objectives for the various parts of the core and some specific tools for achieving these objectives. (These decisions and subsequent events are discussed more thoroughly in the following article.)

Learning from History

The history of the core planning shows us a long and interesting sequence of situations and events. It also suggests a relationship between changing circumstances, community values, and the plans and policies. Planning is not a simple once-and-for-all-time affair. The history of planning in the core shows that it is an ongoing process, although a discontinuous one.



What does this planning history tell us about where we are today? What useful advice does it give to the Coreplan? Past experience tells us that changing circumstances and values have necessitated new decisions through the years about what the City wanted and what commitments it would make to get it. It tells us too that such decisions have never been made quickly or easily, that they have usually not been everlasting, and that they were never meaningful unless followed by action.

This historical background also puts the City's present circumstances in context. There is currently some uncertainty about future change in the core and about the adequacy and effectiveness of existing plans and policies for managing that change. This suggests that new decisions are needed but not the kind of decision that is appropriate.

At least two alternatives seem evident. First, the City could accept that current difficulties and frustrations with major projects proposed in the core, and with the development of rapid transit and the provision of additional housing are the result of some implementation weaknesses in what are basically sound plans and policies. The City could therefore choose to reaffirm its current development objectives and seek to strengthen the tools it has for achieving them. Second, the City could interpret current difficulties and frustrations as reflecting significant shifts in circumstances and values that signal the obsolescence of existing plans and policies. The City could accordingly reformulate its objectives for the core and amend plans and policies to implement a renewed vision of what the centre of Vancouver can be.

Either approach can generate a firmer, clearer, and more coherent overall strategy to meet the present challenges and opportunities in the core. Past experience suggests that this is what is needed now.

Phil Mondor

An Overall Development Strategy for the Core

The first phase of the Coreplan work program, now nearing completion, is a ten-to-twenty year projection of the momentum established by past trends, existing plans, and current investment intentions. Preliminary results of this analysis have been published in recent issues of the *Quarterly Review*. This article addresses the policy context of the Coreplan momentum projection. It presents a survey and partial evaluation of relevant existing plans and policies.

No Explicit Overall Plan for the Core

There is currently no explicitly stated overall plan or policy for the core or even for the downtown peninsula. Instead, there are numerous and varied plans and policies which apply either to specific geographic areas in the core or to particular concerns (e.g. heritage). Initially it is important to get a sense of the implicit overall development objectives or strategy for the core that these components form, and then to assess that strategy.

This approach may assist Vancouver to reaffirm or renew its overall strategy for the core. It should also reveal what elements of the overall strategy need to be revised in the service of reaffirmed or renewed development objectives for the core.

Components of An Overall Development Strategy

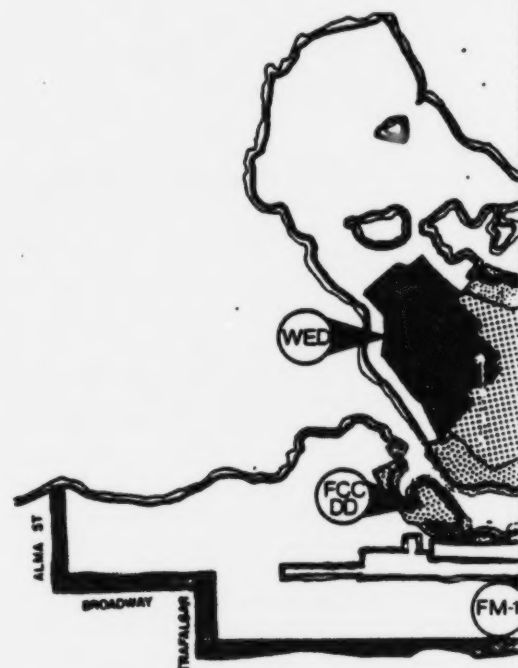
The City has many by-laws and Council resolutions dealing with land use, transportation, and related matters. These influence people's activities in the core. They also affect physical redevelopment which changes the nature and volume of people's activities.

It is generally the **Zoning and Development By-law** which regulates land use and development in the city. This by-law divides the city into districts and regulates within each the use of land and the use, size,

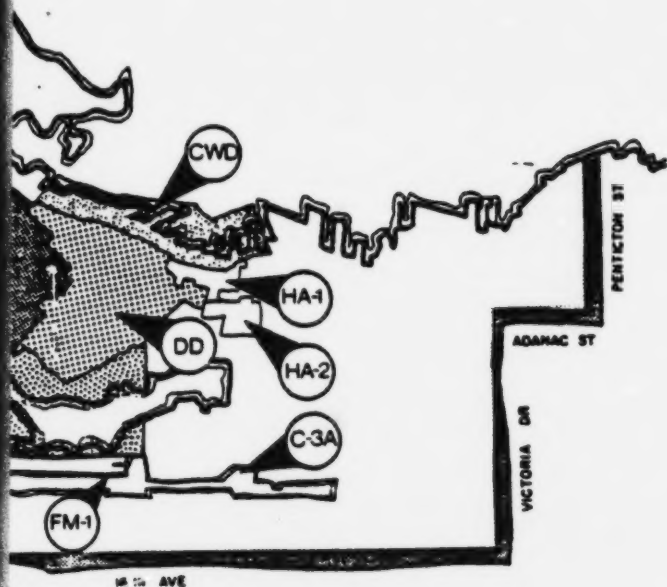
shape, and siting of buildings. For each district there is a zoning schedule that states the general intent of the regulations and prescribes such things as permitted and conditional land uses, maximum floor space ratio (and provisions for conditional and bonus floor space), maximum building height, and parking standards. The major zoning districts in the core are shown on the accompanying map. Unlike other zoning districts, the West End, False Creek, Central Waterfront, and the downtown are regulated by official development plan by-laws separate from the **Zoning and Development By-law**.

To supplement the requirements of some zoning district schedules and official development plans, Council has adopted many planning policies, urban design guidelines, and character area policies. Council has also endorsed several local area plans. As discussed in the preceding article, most of the existing plans and policies for the core were adopted in the mid-seventies after three or four years of study and public debate.

In addition to these regulations and policies, there are several by-laws and Council resolutions dealing with transportation, finance, and other subjects. Foremost among these are City Council resolutions about the GVRD's Livable Region Program and the Official Regional Plan for the Lower Mainland. Insofar



Major Zoning Districts in the Core



as the latter articulate a regional consensus on Vancouver's role in regional and metropolitan contexts (including the role of the core), City Council's position on them constitutes both an important declaration of overall policy and an endorsement of regional actions in support of that policy.

The Streets and Traffic By-law and Council resolutions on transportation matters such as LRT also represent important elements of an overall strategy for the core. Although there is no official comprehensive transportation plan per se, transportation elements are found in official development plans, local area plans, planning policies, and capital budgets.

An Implicit Development Strategy for the Core

When the City's various plans and policies on land use, transportation, and regional matters are brought together, the broad outline of an overall development strategy for the core emerges. This implicit, unstated strategy arises from the stated intents of existing plans and policies and from assumptions, either stated or implied, which accompanied them when proposed to Council for adoption.

Important assumptions are made by plans and policies about one another or about matters of joint

concern. Since most of the existing plans and policies for the core were prepared and adopted at about the same time, some planning efforts undoubtedly formed a context for others. In this way the intents of some plans or policies became the assumptions of others.

The overall development strategy for the core that appears to underly and link the various plans and policies adopted in the mid-seventies is outlined in the box chart on the following page. This initial strategy addressed the general problems of high employment growth, declining accessibility, and deteriorating environmental quality. To summarize, the implicit strategy adopted to deal with these issues was to moderate the rate of employment growth, increase the resident population near places of employment, substantially increase public transportation capacity and usage, and improve amenities and the quality of development.

The City rejected two clear alternatives to this particular strategy. One alternative was to severely limit office development and employment growth and thereby avoid large capital expenditures on a rapid transit system. The other was to permit office development without further restrictions (other than those in effect before 1973) and to service this employment growth with new amenities and major increases in transportation capacity, including a regional rapid transit system.

These two alternatives had been debated since the sixties. The actual strategy developed and selected in the early seventies was a middle option: some limitations on employment growth, the construction of a light rapid transit system, and the encouragement of housing in and near the downtown. The introduction of housing as a policy variable might be attributed to the Livable Region Program, which was gaining momentum at this time. One of the central concepts of the program was the desirability of promoting a regional balance of jobs to population in various parts of the region. More housing in and around the downtown would not only increase the downtown's vitality but would also help to slow the growth of commuter travel by accommodating more workers in the core.

An Overall Development Strategy

OFFICE SPACE

To further enhance downtown Vancouver as the centre of the region and to support LRP objectives:

- by encouraging quality development through urban design guidelines and Urban Design Panel advice;
- by encouraging uses inappropriate for the downtown to locate in a regional town centre; and
- by moderating the rate of office construction and employment growth.

HOUSING

To encourage a greater residential population in and close to the downtown, and to stabilize and conserve the existing character of other neighbourhoods in the core:

- by allowing housing in mixed-use development in the downtown, in False Creek, and on the Central Waterfront through new official development plan by-laws for these areas;
- by stabilizing the changing character of Kitsilano, Fairview Slopes, the West End, Mount Pleasant, and Grandview-Woodland through zoning amendments and neighbourhood improvements; and
- by active City involvement in residential development on the south shore of False Creek.

TRANSPORTATION

To accommodate the transportation requirements of further growth in the core:

- by encouraging transit ridership and by seeking improvements to transit services;
- by seeking to restrain private automobile use while making essential improvements to local traffic systems; and
- by actively cooperating in the development of a regional rapid transit system to be operating by 1986.

AMENITIES

To improve the quality of the environment in the core and to serve both population and employment growth with amenities:

- by encouraging quality residential and commercial development;
- by seeking amenities in private development through bonus provisions in zoning regulations;
- by joint public-private or intergovernmental efforts to provide region-serving public amenities and facilities;
- by neighbourhood improvement programs using funds available from senior governments; and
- by expenditures through a major capital program.

In spite of the adoption of LRP objectives, and resolutions urging regional town centre locations for B.C. Hydro and Federal office buildings, no effective action has been taken to support decentralization of office growth. City Council's approval in principle of the proposed B.C. Place Development, which may include a significant office space component, could considerably alter the location and magnitude of office space potential in the core.

Local area planning programs in Kitsilano, Mount Pleasant, and Grandview-Woodland have frozen or reduced residential densities in these areas.

The residential component of the Central Waterfront Plan was not implemented — partly because of the danger posed by rail operations there. Negotiations with the owners of lands on the north shore of False Creek failed to obtain a solution that would have seen an early initiative on residential development there. Voter rejection of the \$5 million housing fund component of the 1976 capital program diminished the City's intended commitment to the development of social housing.

In 1979 the Downtown District Plan was amended to relax its stringent parking standards. The Downtown Parking Corporation has been permitted to construct additional parking capacity. Transit operations have been reorganized, but capacity and service increases have not been as substantial as initially anticipated. Seabus, additional buses, and the bus-only Granville Mall represent the more tangible improvements. Progress on the planning, funding, and implementation of LRT has been slow.

Civic voters rejected capital programs in 1974 and 1975. The 1976 plebiscite, the last one to date, was presented in four parts. Only the proposals for public works and fire halls were passed. Capital program proposals for parks, recreation and libraries; for neighbourhood improvement; and for housing were rejected.

Major public facilities proposed by the provincial government (a trade and convention centre, stadium, and B.C. Place) have received the City's approval in principle. These facilities were not foreseen when plans were adopted, and neither their servicing requirements nor their civic financial commitments were anticipated.

OVERALL DEVELOPMENT OBJECTIVES

SUBSEQUENT CHANGES

There is no evidence that zoning regulations, policy guidelines, and regional plans have been able to moderate the rate of office space growth. If anything, growth has increased. The reduced density of development permitted in the downtown has had no restraining effect on the total volume of development.

The initial policy of encouraging new development to locate in regional town centres has met with very little success with the notable exception of B.C. Tel's new building in Burnaby Metrotown.

While there has been a modest increase in housing supply in the core, it has been far short of creating the desired level of residential population and lags far behind employment growth. It is only in the last couple of years that some interest and effort has been given to housing in the downtown.

No tangible progress has been made on the provision of housing on the north shore of False Creek. However, the current B.C. Place proposal could increase the amount of housing initially anticipated there.

Considerable residential development has occurred on Fairview Slopes but at the expense of existing housing which it was hoped would be preserved. Other residential areas are changing considerably in their social character, if not their physical character.

Traffic congestion in the core and travel time to the core are perceived to have increased.

Transit ridership has increased slightly but no measurable decline has occurred in private automobile use.

Traffic system improvements proposed in local area planning programs indicate increasing spillover of traffic problems from the downtown to adjoining residential neighbourhoods.

New regulations and guidelines appear to have succeeded in obtaining some public amenities and better quality in new development.

Mini-parks in the West End, the rebuilt Kitsilano Pool, open space and waterfront access on the south shore of False Creek, and community centres are some of the amenities obtained at public expense. Rehabilitation of the Carnegie Library, progress on a new art gallery in the Old Court House, and acquisition and restoration of the Orpheum Theatre represent some noteworthy achievements.

OFFICE SPACE

HOUSING

TRANSPORTATION

AMENITIES

Subsequent Changes in Strategy

The overall development strategy for the core initially established by plans and policies adopted in the mid-seventies has since been modified. The significant changes are noted in the box chart. The most important of these was relaxing the policy of diverting some new development to regional town centre locations.

Whatever the individual merits of these changes, their cumulative effect has been to dilute the initial thrust of the overall development strategy. Especially weak is the City's ability to increase the provision of housing in or near the downtown and its ability to regulate the quantity and location of new office development. The latter is particularly vulnerable given that provincial development proposals for up to 558 000 square metres (6 000 000 square feet) of office space in B.C. Place may be exempt from City zoning regulations.

Results to Date

Six or seven years have passed since the separate components of the overall development strategy were adopted. The expected results have not materialized so far. In fact, the rate of office space construction has increased, residential development in or near the downtown has remained low, and progress on LRT has been slow. These uneven rates of change are evidence that the overall development strategy, as it stands, is not equipped with the tools to implement it effectively.

The limited success of the City's overall development strategy for the core could be attributed to one or more of the following: inadequate plans and policies adopted in the first instance, subsequent decisions that modified their implementation, and changing circumstances. While there is evidence for the first two factors, the third factor is especially important.

First, the economic climate for office space construction and employment growth has changed in recent years, and the rate of downtown growth has increased. Current plans have failed to control growth more tightly because they were not formulated to cope with this increased level of development pressure. If economic conditions had not changed, the growth trend of the early seventies would probably have been moderated.

RESULTS TO DATE

Second, circumstances have also changed in housing. Higher levels of in-migration to the Lower Mainland have raised housing prices. The consequent increase in land values makes any new centrally-located housing unaffordable to most households. Changes in provincial and federal housing programs and related tax legislation have also reduced the feasibility of government-assisted and private residential development.

Third, senior governments, regional bodies, and other GVRD municipalities have a major role in the development and operation of a core-oriented rapid transit system serving the region. The necessary participation of these many jurisdictions and the large number of implementation decisions involved have delayed the achievement of the City's rapid transit objectives.

Finally, the three civic elections of the last seven years have periodically altered the community values represented through City Council. This has affected Council support of development objectives adopted in the mid-seventies.

The Need to Revise Plans and Policies

Plans and policies are implemented through many small decisions made on a day-to-day basis, such as decisions about development permit applications. Most existing plans and policies represent big decisions made several years ago about how to make these smaller decisions. However, because values and circumstances have changed, big decisions may have to be made anew if plans and policies are to remain a useful guide in making small day-to-day decisions.

Several characteristics of the City's current plans and policies suggest that a renewal is necessary. First, they do not explicitly form a clear and comprehensive strategy for the future of the core. Second, there are several inconsistencies among them, and they have displayed varying degrees of ineffectiveness. Finally, they confront somewhat different circumstances and challenges than when they were first adopted.

These deficiencies indicate the need for an overall development strategy that explicitly and unambiguously states Vancouver's current goals and objectives

for the future of the core. However, two approaches to this are possible: first, a reaffirmation of current objectives and a strengthening of implementation measures and commitments; or second, a reformulation of development objectives for the core and corresponding adoption of effective commitments and implementation measures.

Ineffectiveness and lack of overall clarity in current plans and policies by themselves do not require major changes in the City's development objectives for the core. Nevertheless, to remedy these deficiencies would involve some revision and strengthening of both the implementation tools the City has to achieve its objectives and the commitments it is prepared to make.

Reaffirmation of current objectives may not be sufficient however. The public and private development projects proposed in the last two years lead us to anticipate large transformations in the core. In particular, major public projects are expected to have many land use, transportation, economic, and fiscal effects. While cooperative planning processes and public participation programs have been established to work out specific details, making various implementation decisions is proving to be a difficult process, as the debate over the recent Amphitheatre/B.C. Place roadway proposal has shown.

A factor contributing to these difficulties undoubtedly lies in the City's present plans and policies for the core. These plans did not foresee and make provision for facilities like those now proposed. Existing plans and policies are also silent about what to do if office space and residential development in the core occurs at rates substantially different than anticipated. Finally, the very existence of these public projects suggests that a different set of values may now be guiding core change.

These observations suggest that a renewed overall development strategy for the core might begin with a fundamental re-examination of the City's development objectives for the core, and public involvement in the formulation of new objectives and commitments. In so doing, a firmer and clearer consensus could be developed to guide the many public and private decisions which will radically reshape Vancouver's core in the next few years.

Phil Mondor

Core Planning In Other Cities

An important step in the process of developing policy options for Vancouver's core is learning from the experience of others. To this end, a number of North American cities were contacted to determine the major planning issues, policies, and implementation tools in each jurisdiction. In all, nine cities were surveyed: Calgary, Edmonton, Toronto, Denver, Houston, Minneapolis, Portland, San Francisco, and Seattle. All of these cities are experiencing the pressures of post-industrial urban development and change and were chosen for the survey for this reason.

The post-industrial economy is characterized by the expansion of the quaternary sector, which is the information-processing sector of the economy. This shift from blue collar to white collar jobs has created considerable growth in office development. In large North American cities, this growth has been reflected in high-density office development in their core areas. Intensive office development in these areas is a direct result of the benefits office developers and their business clients receive from the central location of the core. A large part of office work requires the face-to-face contact available at a central location. Consistently low vacancy rates in core business areas underscore the demand for this benefit.

There are also costs associated with intensive office development in the core. Some of these costs are obvious and are usually paid for by all city taxpayers. These include the costs of road maintenance, transit subsidies, infrastructure improvements, police services and the like. Other costs are less obvious and are indirect in nature. These indirect costs are usually not paid for through the taxation system. The continued growth of office jobs in the core requires the labour force from increasingly distant residential locations to converge on the core employment centre through an increasingly congested transportation system. The delays commuters experience getting to work each day are in fact a tax that is not formally collected.

The growth of core office space can also lead to a lack of vitality in city centres outside normal working hours. Office specialization creates a nine-to-five city centre with very little street activity or life outside those hours. Generally, this is less of a problem in Canadian



cities because there are substantial residential populations near the core office districts. The cores of American cities exhibit the effects of a residential flight to the suburbs that was aided by extensive expressway development over the last two decades. Most cities have recognized this problem and have residential development incentives aimed at increasing the vitality of their downtown areas.

Many constraints limit the policy options available to local governments in responding to change. Each is limited by the legal heritage, jurisdictional constraints, community values, and physical legacies of their own peculiar situations and circumstances. A number of the cities surveyed appear to be preoccupied with transportation policy. Others attempt to intervene in market forces by reshaping the locational pattern of new development. However, even though the policies of each of the nine cities vary in detail, three basic development strategies can be distinguished.

The traditional strategy is to accommodate core office growth by increasing urban services; transportation in particular. Houston, Denver, and Minneapolis pursue this type of strategy. Calgary, Edmonton, Portland, and Seattle also accommodate core growth, but in addition have zoning policies to encourage office growth outside the core area. The second strategy is to turn the situation around and limit growth to a predetermined level of service. Toronto is the only city that has adopted this type of strategy. The third approach, followed by San Francisco, is to service core growth and reapportion the costs of that growth through the use of levies and quotas.

Accommodating Growth by Expanding Services

In Denver, Houston, and Minneapolis the overall strategy is geared to accommodating the demands that result from intensive office growth in the core. This strategy is essentially reactive, responding to the market

demand for services. There is no intent to decentralize core office growth in these cities.

The provision of adequate transportation service is of primary concern as continued growth of the office core generates travel demand that puts pressure on the existing private and public transportation system. In responding to this pressure, the main emphasis is now being placed upon improving and expanding public transit facilities. Even a highly auto-oriented city like Houston has recognized the need to encourage transit usage.

Denver and Minneapolis encourage housing development in their core areas through generous zoning provisions, including bonuses. The incentives for downtown residential development complement the emphasis on transit policy, but the basic rationale behind these incentives is a desire to increase the vitality of their core areas.

Calgary, Edmonton, Portland, and Seattle are also following a strategy of accommodating the demands of continued downtown office growth but with the addition of a policy to encourage some growth at stations along transit routes. Calgary and Edmonton already have new rail transit systems, Portland's is being developed, and Seattle is assessing the appropriate technology for its shift to transit. However, the amount of office space development as transit stations is likely to be small when compared to the continued growth of core office stock.

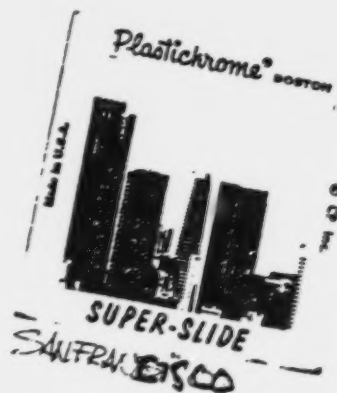
Limiting Growth to a Given Level of Service

Wary of the circular logic of increasing urban service capacity, particularly transportation, only to encourage further intensification of the core, the City of Toronto has adopted a strategy of decentralizing office growth. The policy for dealing with growth is turned around: transportation capacity is put first and office development capacity is limited to this level of service. The measures contained in the 1976 Central Area Plan reduced the potential for downtown office development to match the maximum capacity of the existing transportation system. In this way, the core and metropolis are shaped to the transportation system rather than designing and redesigning the transportation system to service an ever-increasing office core.

Reducing the potential for office development in

the downtown has been achieved through downzoning. This loss of development potential has been partly offset by an increase in the amount of residential development permitted in the downtown. Increasing downtown housing may relieve some of the pressure on the transportation system as well as partly compensating land owners.

Implementation of a decentralization strategy is dependent upon the regional planning context in that regional locations for deflected downtown office development must be available. Metro Toronto's *Metroplan* buttresses the decentralization objectives of the City of Toronto's *Central Area Plan* by providing alternative locations in the metropolitan region for office development.



Reapportioning the Costs of Growth

The City of San Francisco has adopted a different strategy. The **Guiding Downtown Development** report prepared in May 1981 contains proposals that are intended to maximize the advantages of downtown growth and minimize the disadvantages. The strategy is not to limit the amount of growth in the downtown but rather to reapportion the costs of this growth through the use of transportation levies and housing quotas. Interim controls are being implemented through the discretionary powers of the City Commissioners while the proposals are put through a formal hearing process.

Recognizing that new office development in the downtown demands additional transportation service, developers of office space in downtown San Francisco are to be assessed a levy of five dollars per gross square foot of office space. This contribution will go to a transportation fund that is to be used for maintaining and augmenting transportation service.

In addition, the developers of office buildings over 50 000 square feet must also meet a housing quota. Developers are to provide housing either as part of the office building or at another site somewhere within the city. The amount of housing to be provided is based upon several assumptions about the San Francisco market. The formula calls for 640 square feet of residential space to be provided for every 1 000 square feet

of office space. Even though the formula has been challenged in the courts, the City has been able to achieve this target through negotiation on individual office projects. The rationale for this quota is that continued office development and the creation of new jobs can result in an imbalance in the supply of housing, relative to demand, causing an escalation of housing costs and rents.

The San Francisco strategy is the most active form of regulation attempted by the cities surveyed. Growth is managed as it occurs rather than waiting for the long-term results of a conventional land use plan. Immediate results are realized. A monitoring process is to be set up to evaluate any significant cumulative impacts that may be difficult to identify on the basis of individual projects.

Implications for Vancouver

Development trends in Vancouver exhibit the urban growth tendencies apparent in other cities. Despite a regional planning program advocating deflection of office growth to regional town centres, high-density office growth continues in Vancouver's core. The growth of the core as an employment location adds to the demands placed upon the transportation system. The basic policy of the City has been to accommodate this growth. However, if present trends continue, this policy may produce substantial negative effects, indicating that other policy options should be considered.

One alternative would be to pursue a strategy similar to Toronto's by reassessing the ultimate office development capacity of Vancouver's core. This capacity could be reduced to match the maximum capacity of the transportation system, limiting the need for costly future additions and supporting the GVRD Livable Region Program.

Another strategy would be to follow the example set by San Francisco and establish mandatory housing quotas and transportation levies for future office development projects. However, the legality and political feasibility of such measures are in doubt. In addition, residential development capacity in the city would have to be increased as the present capacity allows only a very limited increase in housing stock.

Joe Stott



Industry and False Creek Redevelopment

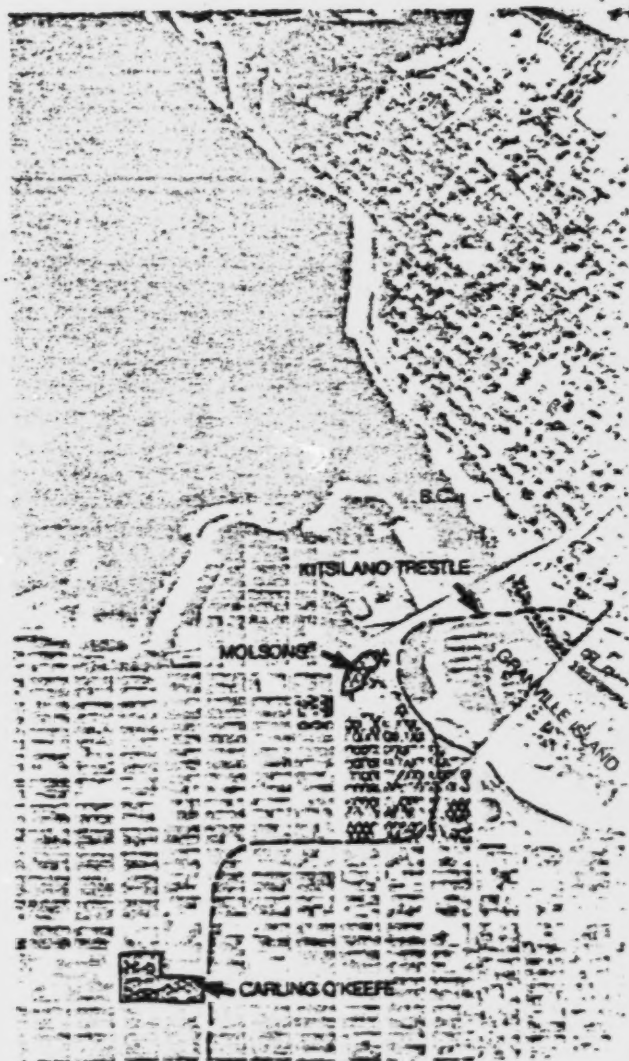
False Creek — that inlet of the sea which separates the downtown from the business and residential districts of Kitsilano, Fairview, and Mount Pleasant — has, for most of Vancouver's history, supported industrial activities in and around its waters. It is now about half of its original size, having undergone several major fill projects to accommodate this development. Industrial users have included a variety of manufacturing, warehousing, and transportation establishments, attracted by the advantages of sheltered waters, rail service, and proximity to the downtown and port.

Today False Creek is the focus of attention and activity from other quarters. Although the recreational potential of the water and the cultural, residential, and commercial potential of the adjacent uplands have long existed, they have only been actively pursued in recent years. Governments have been the prime motivators.

The first steps in realizing this potential were taken at the City's initiative with the development of the maritime museum, planetarium, archives building, and Vanier Park in Kitsilano and residential development on the south shore west of Cambie. This was followed by commercial and marina developments on both the north and south shores, and the federally-sponsored conversion of industrial Granville Island to a mixed business, commercial, and recreational area exceeding Gastown in popularity. Now, with the purchase of the rail yards on the north shore, the provincial government is proceeding with its plans to develop a stadium and large-scale commercial, residential, and cultural facilities (B.C. Place), and to host a world-class exposition in 1986 (Expo '86).

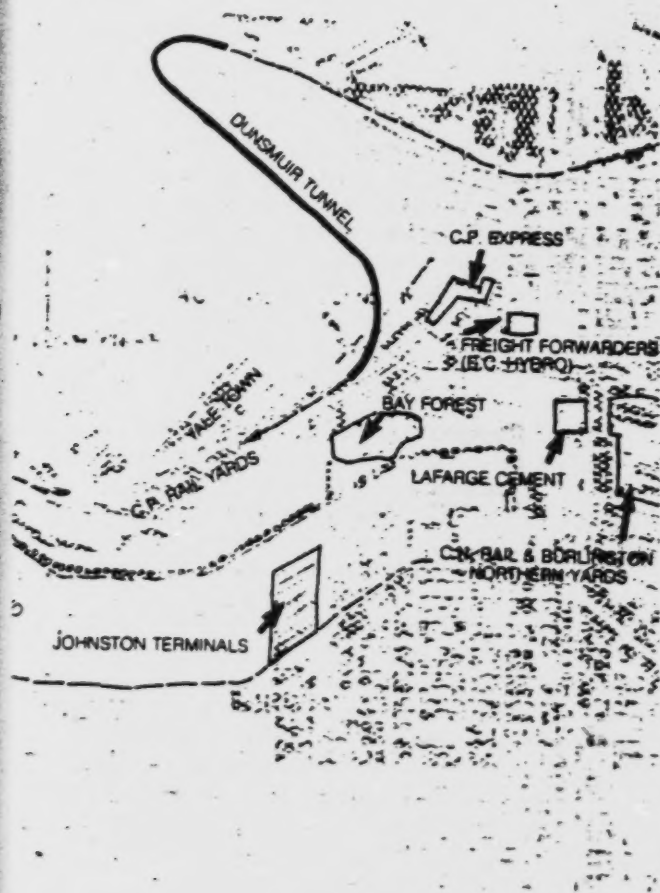
These developments have had, and will have, major impacts on industrial activity in the area. The provincial initiatives on the north shore are particularly wide-ranging and involve a rather sudden disruption of industrial activity and established transportation systems, including the eventual abandonment of rail service in the area, reworking of the road system, a new Cambie Bridge, and the removal of the Kitsilano Trestle.

Virtually all industrial establishments on the north



FALSE CREEK: INDUSTRIAL AREAS

shore of False Creek will have to relocate, if they have not done so already. Most significantly, this includes Canadian Pacific's rail yards and related storage facilities, a number of freight forwarding or trucking firms, and a sawmill. The removal of rail trackage will eventually preclude service to Yaletown (the old warehouse district to the north of False Creek) and will put an end to service to the south shore of False Creek by way of downtown and the Kitsilano Trestle. With this displacement of industrial establishments and rail services, and with continuing pressure for further development generated by the new land users, a number of other industrial firms not actually in the False Creek area will also be affected. Some supply False Creek



-RAIL LINES

LIGHT INDUSTRIAL AREAS 1981

industries; some are served by them. Others, with no direct ties to False Creek businesses but located nearby, will nevertheless face increasing challenges for their premises and land as development pressures continue.

Early last year the Planning Department engaged a consulting firm, Woods Gordon, to conduct a small study of these impacts on industrial firms. The findings of that study, used in conjunction with other information and analysis, are the basis for the rest of this article.

Industrial Relocation

Nearly all industrial establishments on the north shore of False Creek anticipate that they will be gone by

the end of 1983. Some have already left, in whole or part, and most others plan to leave before the end of this year. Only one small existing firm planned to close with the rest planning to relocate elsewhere. As many of the firms have close ties with CP or BC Hydro rail operations, they plan to relocate to industrial areas served by CP and BC Hydro, principally in Coquitlam and New Westminster. Other locations considered by some of the larger firms include Pitt Meadows, Langley, and the Fraser River area of South Vancouver and Richmond.

Few firms identified the development of B.C. Place as the reason for their move. Most had planned to relocate in any respect because of the high price of land and rents and the uncertainty of renewing their leasehold tenure, reflecting the land's potential for higher use. Plans to relocate were, nevertheless, hastened by the B.C. Place project. This has caused difficulties for some firms that have not had either the capital necessary to cease production and finance a move or the time to find a suitably-located site at an acceptable price.

Firms not directly in the path of the immediate B.C. Place developments but within the area that the Province could potentially expropriate (for example, Beach Avenue and the south shore of False Creek) were not generally considering relocation. There are a few exceptions but these seem to be related to other factors such as lease tenure. Some firms in this peripheral area are considering splitting their operations, citing high land values and rents as the reason for moving part of the operation and a desire to retain existing clients as the reason for retaining at least some presence in the inner-city.

Impact of Relocation

Following relocation, a number of firms anticipate reduced production for a settling-in period. This will be a period of upgrading machinery, revising work processes, and establishing new markets. There was optimism that any production cutback would last no more than one or two years. During this period, a few firms thought they would have to temporarily decrease employment. However, most felt that it was not a matter of cutting back jobs but of adding new jobs more slowly.

About 4 000 employees will be affected by the relocations. Most live in Vancouver and many will afterwards have to commute out to the suburbs to their

jobs. Overall this will mean an increase in commuting miles, partly because commuting trips will be longer, but also because of increased car use (the suburban areas tend to be poorly serviced by transit compared to the inner city). However, these commuting trips will tend to be in directions which are counter to the major rush-hour flows.

With only a few exceptions, firms felt that they would retain their existing local sources of supply (products, materials, and services) after relocation. Many of the firms hoped to retain their local markets as well, but it was recognized that the cost and time associated with servicing downtown and inner-city clients from suburban locations could mean losing some existing business to competitors. Many felt, however, that this would be offset by capturing new markets in the suburban areas. In fact, several had already established themselves quite well in suburban markets.

A survey of local suppliers and markets of False Creek industrial establishments indicated that none of them felt that their business relationships would be affected by the relocations. A few were planning to relocate, but this decision had been prompted by escalating land and rent costs and increasing traffic congestion rather than by events in False Creek.

In terms of the movement of goods, the relocation of False Creek firms will lead to the decrease and eventually the termination of rail traffic to the north shore of False Creek. For the most part, this will have no direct impact on residents in the city as virtually all of the rail traffic moves via the Burrard Inlet waterfront and the Dunsmuir Tunnel. However, there will be changes in trucking patterns as a result of relocation. Presently, False Creek firms have suppliers and markets in both the inner city and the suburbs. Relocation to the suburbs will reduce the length of some trips and increase the length of others, with the net overall effect being that the two may cancel each other out. However, because the relocating firms tend to concentrate in specific areas, some city streets (in particular Main, Knight, Boundary, and Marine) may experience an increase in truck traffic.

It has been suggested that the relocation might reduce truck movements in the long run because many industrial markets and suppliers are also relocating to the suburbs. But a large and growing commercial market would remain and this would have to be served from somewhere. It had been anticipated that this market would be served by other industrial establishments in

the inner city because the relocating firms would eventually lose this business to competitors closer in. As indicated above, however, none of the commercial clients felt that they would switch suppliers just because their present suppliers are moving farther away. Furthermore, with increasing pressure on inner-city industrial land for non-industrial use, more and more competitors are relocating. In the long term, therefore, the anticipated reduction in trucking may not occur.

Impact of Rail Abandonment

Eventually rail service to the north shore of False Creek will probably be discontinued. Presently, the principal users of rail service to or through the north shore of False Creek, apart from industries in the area that will be relocating, are businesses in Yaletown and two large breweries that receive shipments via the Kitsilano Trestle.

Yaletown clients are small but numerous. Shipments in 1980 involved several hundred rail cars, most often discharging manufactured goods such as furniture. In the longer term, discontinued rail service would have little impact as industrial firms in Yaletown are gradually being replaced by the residential and commercial uses that development pressure and planning policies encourage.

However, a sudden disruption of service could create a difficult short-term situation in Yaletown. Some of the firms would find it difficult to relocate quickly because of the limited supply of suitably-priced alternative warehouse space on sites served by rail near their downtown markets. Their only alternative would be a switch to trucking, but many of the streets and lanes are already heavily congested and some are unable to accommodate larger trucks. Loading docks could be altered or eliminated to make way for more trucks, but the docks themselves are heritage features that form an important part of Yaletown's character.

The large breweries in Kitsilano could receive shipments by way of routes other than the present one that passes across the north shore of False Creek. There is, however, no assurance that the two other routes will not be threatened at some future time. These routes pass through residential communities and there may be pressure either to discontinue freight movement or to replace them with transit corridors.

The breweries would not relocate if rail service was

unavailable. Grain and malt would be transhipped elsewhere, possibly Richmond, and trucked through the city to the plants. The breweries estimate that this could involve an average of twenty additional truck trips per day for each brewery.

Little Reason for Concern . . .

The transition of a large part of the False Creek area to commercial, recreational, and residential use has been generally well received and accepted. It offers an exciting new focus for activity in Vancouver. However, this transition has not and will not occur without some effects on industrial activity and goods movement.

The consultants who studied these effects concluded that, in general, there is no cause for concern. Indeed, while many industrial establishments are moving from False Creek at a time when the City is actively promoting industrial development, most are relocating by their own choice. The dislocation of jobs and activity would have eventually occurred on its own.

The impact of relocation on production and employment is not anticipated to be great and in any respect is likely to be relatively short-lived. An increase in commuter journeys and distances will be counterbalanced by a decrease in movements with the rush hour flow.

Additional trucking movements from suburban locations to city markets will be offset by reduced movements from the core to the suburban markets. Particular routes will experience increased truck movements but others should experience a decrease, par-

ticularly inner-city routes where congestion is already pronounced.

There may be some immediate problems associated with rail abandonment on the north shore of False Creek but these are associated more with timing than with abandonment itself. Yaletown and B.C. Hydro's Carrall Yards will lose service but Yaletown is converting to other use and freight forwarders in the Carrall Yards had planned to relocate in a few years in any respect. Other rail-dependent businesses, such as those in Kitsilano, have other rail alternatives that could probably be arranged given sufficient time to do so.

. . . But a Lesson to be Learned

Overall it would seem that the conversion of False Creek from industrial to other urban uses is occurring without significant impact on industrial activity and goods movement. Specific firms have nevertheless experienced some problems as a result of the timing of decisions or lack of communication. Even after the present redevelopment schemes have been completed, there will still be many industrial firms in and around the False Creek area. Others will be dependent upon False Creek transportation services. Should there be future plans for redevelopment which could involve them, it would certainly help to provide sufficient information and advanced warning to allow them the time to properly consider their alternatives and make their plans. The City's own concern about declining industrial job opportunities might be addressed by ensuring that suitable alternative sites are available in the city and the necessary transportation systems are in place.

Len Tennant



Technological Change and Office Employment

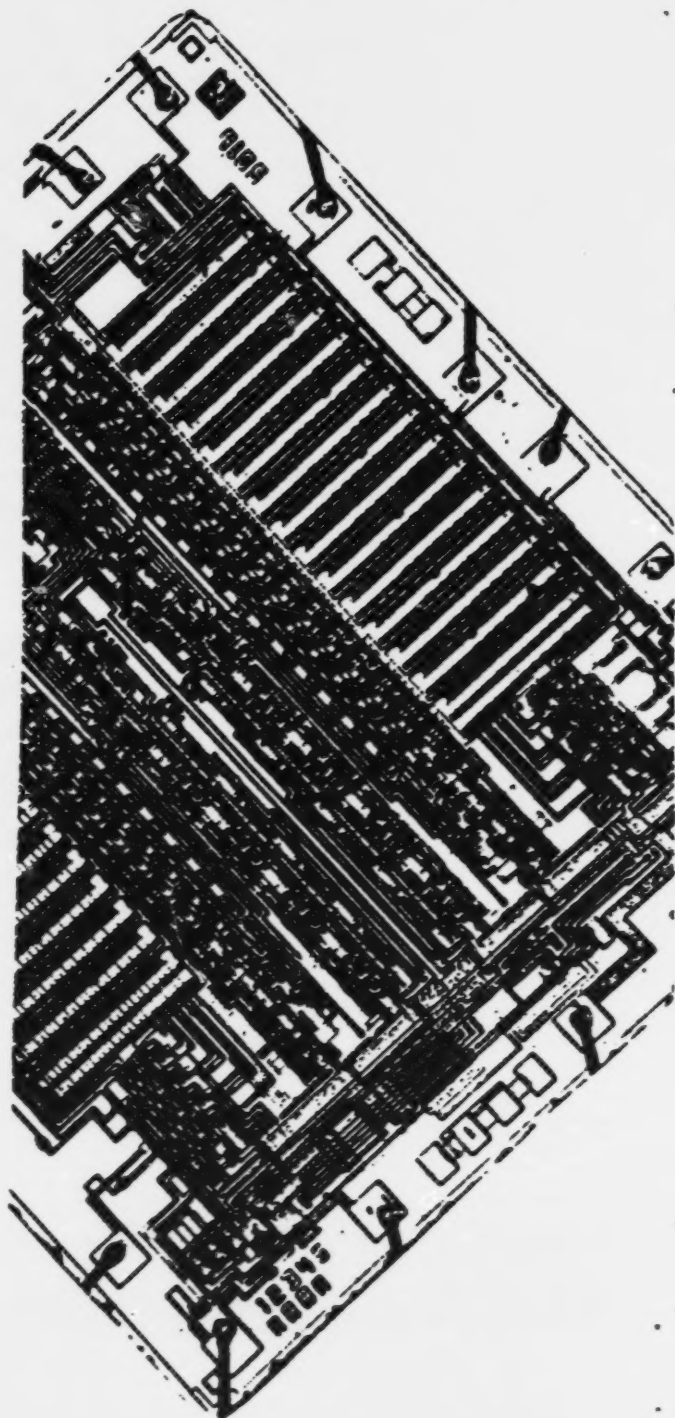
Anticipating the impacts of employment growth in Vancouver's core over the next two decades requires forecasts of the probable rate and level of growth. It is likely that growth in the office sector will increasingly dominate core employment growth, but the continuation of past trends, while plausible, is anything but assured. One of the major sources of uncertainty is the extent and impact of technological change in the office work place.

The Micro-Electronic Revolution

Until recently, the office sector has been relatively untouched by technological change. While capital investment in technological innovations in other sectors of the economy allowed dramatic increases in productivity, the office sector has remained relatively labour-intensive with low levels of investment per worker.

Over the last decade, however, the rapid development of microprocessor electronics has produced some astounding breakthroughs in the application and design of machinery. Microprocessors are devices for storing and processing vast quantities of information at high speed. Commonly referred to as a "chip", the microprocessor is the catalyst of the micro-electronic revolution as well as the building block for innovations in telecommunications.

New machines with microprocessor circuitry have allowed the automation of some of the clerical and administrative tasks performed in offices. Word processing, electronic file storage, and data processing equipment have each increased the productivity of office workers. Future technological developments are expected to continue to reduce the cost and increase the capabilities of this type of equipment. The pace of development of improved machines and software has been extremely rapid, posing problems in terms of both identifying what is possible and devising a probable timetable. Within the next two decades, these developments could lead not only to the paperless office — in which all information is stored, accessed, and exchanged by computer — but also to voice-



recognition hardware that responds to simple verbal commands.

The emergence of technology to automate the clerical and administrative labour performed in the office workplace raises important issues about the changing nature of work and the effects that this will have on our cities. In the same way that automation influenced industrial production, automation of the office could affect the location and design of office buildings and the type and number of office jobs. In turn there could be wider social impacts, adding to the changes that are likely to be created by the adoption of micro-electronic technology outside the office sector.

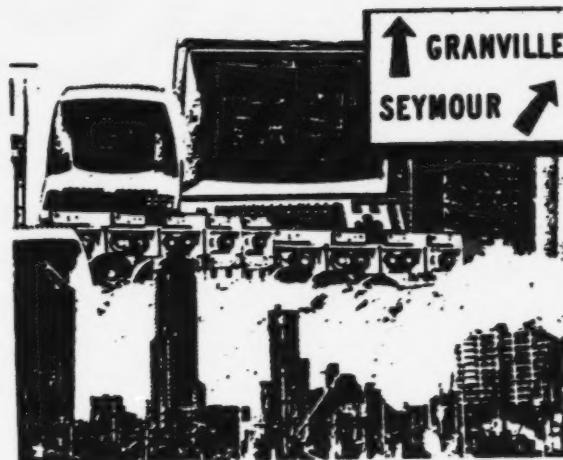
There is a wide divergence of opinion on what the effects will be, and even less agreement on whether the changes are to be welcomed or not. The only consensus is that the effects of change in the next decade or two are likely to be profound. Some analysts say that we are on the threshold of a period of rapid change for individuals, business, and society; a change as profound as any of the changes experienced in the past two hundred years.

Employment Effects

Until now, the most dramatic employment effect has been the automation of low-skilled clerical jobs. Text processing equipment has reduced typing pools and electronic file storage has reduced the number of file clerks. Those who remain have acquired the skills to operate the new equipment, have higher levels of productivity, and more time to engage in other activities like research. A case study of one large Canadian corporation revealed that its clerical staff had declined from 78 percent of the office work force in 1977 to 46 percent in 1980.

As office automation equipment becomes more sophisticated, and less costly, demand for low-skilled clerical jobs is likely to decrease. Semi-skilled clerical jobs are also likely to be affected. Some of the professions could also be transformed by micro-electronic technology. For example, frequent users of legal services will be able to reduce their demands on the expensive time of their lawyers by consulting electronic legal advice, judicial precedent, and the format for legal contracts. Similar changes could be envisaged for other professions or jobs requiring specialized knowledge.

Some analysts claim that the new technology will eliminate vast numbers of clerical jobs, greatly reducing



the number of people who will need to be accommodated in office buildings. Declining office employment would seriously reduce job prospects for women, as most clerical jobs are performed by women and women are heavily dependent upon office occupations. One estimate is that nearly one million Canadian women could be without employment by 1990 as a direct result of lower demand for clerical labour.

Other analysts argue that this view is far too pessimistic. While job losses will occur, they will be offset by a peculiar phenomenon already associated with current trends in automation. Productivity gains are applied to business expansion or "jobless growth". Firms increase the market for their services rather than put their employees out of work. Companies reassign workers to generate new business or have them perform tasks that had previously been neglected.

Another argument that has been put forward suggests that social and organizational frictions, ranging from psychological stress to resistance by unions, are stronger forces than technological change. Consequently, clerical employment could remain strong in the foreseeable future despite alternatives. Even high interest rates may be a factor, as they reduce the profitability of substituting capital for labour.

In short, there is little agreement on what will be the result of office automation. Technological change will result in increased productivity but the number of jobs released, the extent to which "jobless growth" will absorb any slack, and the strength of resistance to change are all uncertain.

Locational Effects

In addition to affecting the total amount of employment in metropolitan areas, the micro-electronic revolution may also affect the distribution of office employment. Again, there are differences of opinion about the possible locational effects.

The conventional wisdom is that office space has been concentrated in downtown areas because the downtown offers advantages in terms of easier face-to-face contacts between firms, more prestigious locations, and the widest access to the metropolitan labour force. However, research indicates that almost half of the office meetings currently conducted through face-to-face personal contact could be replaced by teleconferencing or electronic communication. It is possible that this, together with reduced labour needs, may weaken the cost advantages of downtown locations and prompt the decentralization of offices from the downtown to cheaper suburban locations.

It has even been suggested that technological change may eliminate not only the need for a central concentration of offices but also the need to assemble a firm's workforce at one location. Instead of travelling to work, a firm's employees may work at home, linked to central data banks and to each other and employees of other firms by computer terminals or teleconferencing. From this perspective technology would allow the substitution of communication for transportation, leading to a new pattern of urban development. The downtown high-rise office tower would become as outmoded as the multi-storey inner-city industrial plant.

But automation, and the telecommunications dimension of it in particular, will only proceed as the inputs and outputs of office work become standardized. At present, most of the products produced and consumed in the office workplace (services, advice, and information) are not standardized, requiring direct face-to-face contact between producer and consumer. It is also speculated that there is a deep-seated psychological need for this personal contact, a need that can never be substituted by even the most sophisticated communications devices. It is argued that as long as this need remains, downtown office agglomerations will persist.

Coping With Uncertainty

The uncertainty about the impact of technological change on office employment poses considerable problems for planning the future of Vancouver. It is possible that the next two decades may see growth rates in office space and employment in the downtown similar to those of the last two decades. But as Lewis Mumford reminds us, "trend is not destiny", and it is also possible that we could be faced with a brand new situation — growth in the office sector without growth in downtown office space or employment.

Policies and decisions should respond to this uncertainty. If present trends continue, we will be faced with very difficult problems in terms of meeting transportation and housing demands. In terms of minimizing risk, the safest course may be to plan as if present trends will continue while trying to remain open and flexible to change. This implies that large fixed investment or other irreversible decisions should be delayed until the last possible moment, that development and use of office technology should be closely monitored, and that careful consideration should be given to the adaptability and robustness of policies.

Joe Stott

Vancouver's Housing: An Update

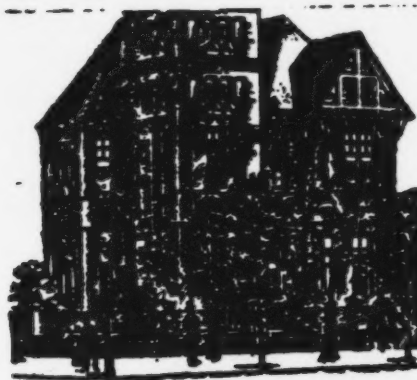
A buoyant economy, rising interest rates, new jobs, and limited housing supply contributed to a dramatic increase in the cost of housing in Vancouver between 1979 and early 1981. Over that period, average prices of single-family homes in the city virtually doubled. Since the second quarter of 1981, however, the house prices have fallen considerably. The present lull in housing costs gives us a chance to review some of the events of the past few years and to look ahead to new housing concerns. In particular, it provides an opportunity to see what can be done to provide a better balance between housing supply and housing demand.

Supply and Demand Factors

Following three years of slow economic growth, the B.C. economy began to improve in 1978. Over 155 000 new jobs were created in B.C. between 1979 and 1981. More than 40 percent of those jobs were in the Lower Mainland. These new jobs encouraged migration to B.C. Between 1979 and 1981 over 120 000 people came to B.C. At the height, net migration reached 1 000 people a week. Some came for jobs, while others sold homes elsewhere in Canada and moved to the coast to retire.

Such large movements of people had a profound effect on the housing market. New residents were arriving at a time when the number of housing starts were down. In 1979 new house production in metropolitan Vancouver was 12 827 units, close to a ten-year low. In the city itself, only 2 370 units were started in that year. Existing housing was quickly filled up. The number of vacancies dropped and prices rose to all-time highs. The combination of rising house prices and increasing interest rates resulted in many potential home buyers being priced out of the ownership market.

Renters were also hard hit as demolitions reduced the stock of modest-priced housing. An increasing proportion of the remaining rental housing came out from under rent controls. Rents for decontrolled units increased on average by 18 percent in 1980. Many renters faced considerably higher increases. In contrast, incomes rose by less than 15 percent annually in 1979



and 1980.

By the third quarter of 1981, mortgage rates had risen by more than forty percent since the beginning of the year. As interest rates increased and the economy slowed down, both the number of sales and sale prices fell. Changes to federal taxation laws resulted in a large number of multiple rental starts in the last months of 1981. Vacancy rates are increasing as these rental units come into the market. In one year the market has changed from a sellers' to a buyers' market.

Change in the Housing Stock

During the last four years 14 520 new dwellings were built in Vancouver. However, many of the new units were built on sites which required the demolition of older, modest-priced housing. As a result, the net increase in the city's housing stock was only 7680 units. Every two new units only added one additional dwelling unit to the total supply.

The relationship between gross and net building activity varied considerably throughout the city. Only on sites such as False Creek and Champlain Heights, where housing replaced non-residential uses, did new construction result in a substantial net increase to the city's housing stock. In the conversion-zoned areas surrounding downtown, rooming houses and studio suites were replaced by one-and two-bedroom apartments. Between 1976 and 1980, gross development activity of 950 units in conversion areas resulted in a net gain of only 110 units. In effect 10 units were being built in conversion areas to yield a net increase of 1 unit. In Kitsilano 422 new units were built yet the total number of dwelling units in the Kitsilano conversion zone remained constant between 1976 and 1980.

The modest increases in housing stock, in the face of high demand, contributed to price rises and displacement of lower-income renters. Less than 20 percent of new units built in 1981, were affordable for low- and modest-income households. The City played a key role in providing most of these units. In 1981, 450 affordable units were started on lands leased from the City by non-profit and cooperative groups. This City

DWELLING UNITS COMPLETED 1976-1980

land was leased at less than market price, resulting in the City foregoing about \$7 million of revenue.

Rethinking Housing Supply

During the past four years, housing prices have swung from being relatively stable to an all-time high and have since declined. Will house prices continue to drop or will we experience another price rise during the next four years? To a large extent, this depends on employment growth and general economic conditions. When the economy picks up again, it is safe to say that Vancouver is in for another round of price increases, partly because of the limited potential for adding to the housing stock in the city.

Previous issues of the Quarterly Review have discussed the mismatch between the amount of growth in office space and the growth in housing stock that the current zoning allows. Under the existing zoning, office space could expand by 300 percent but the housing stock can only increase by 20 percent. Most residential areas of the city are already over 90 percent developed, and as areas near capacity, they approach unit for unit replacement: for every new unit built an older, less-costly unit is demolished. Only the downtown, False Creek, and Grandview-Woodland areas have substantial remaining development potential.

Assuming employment continues to grow, it is time to rethink the city's housing supply. Limited resources and jurisdiction severely curtail actions the City can take to provide housing. One of the City's few powers is the ability to control the amount, type, and location of housing through zoning. The last comprehensive review of the city's housing capacity took place in 1964. Some apartment sites were added around suburban commercial centers. A total residential capacity of 225 000 units was established. During the 1970s several downzonings in apartment areas reduced the capacity to 210 000 units. This capacity needs review.

By increasing housing opportunities, the City could ensure an adequate supply of developable sites. This could prevent the price of housing being unduly bid up because of limited opportunities for development. Re-development pressure on older housing could be reduced somewhat by providing other development opportunities, and by regulating and encouraging the retention of older rental housing.

New units will not necessarily be affordable. Only





senior government funding for non-profit housing, and requirements for income mix such as those included in the False Creek guidelines, will ensure that some of the new stock meets the goals of choice and affordability.

Where could new housing be built? Existing communities are reluctant to change. However, without new housing opportunities to balance employment growth, house prices and commuting costs will continue to rise. Increasing the city's housing stock can be done through a variety of initiatives which:

- make the most of the remaining capacity;
- convert non-residential land to residential uses;
- encourage the mixing of residential and non-residential uses; and
- increase densities in high amenity areas where excess service capacities reduce the public costs of densification.

Considerable public debate will be necessary to identify appropriate areas in which to increase the supply of housing.

Ann McAfee

NET INCREASES IN DWELLING UNITS 1976-1980



The figures on the top map show the total number of dwelling units completed in each area between June 1976 and May 1970. The figures on the bottom map show the net increase in dwelling units in each area for the same period. Net increases are calculated by subtracting the number of demolitions from the number of completions in each area. The shaded areas are those where the zoning does not permit residential uses.

Downtown Employment

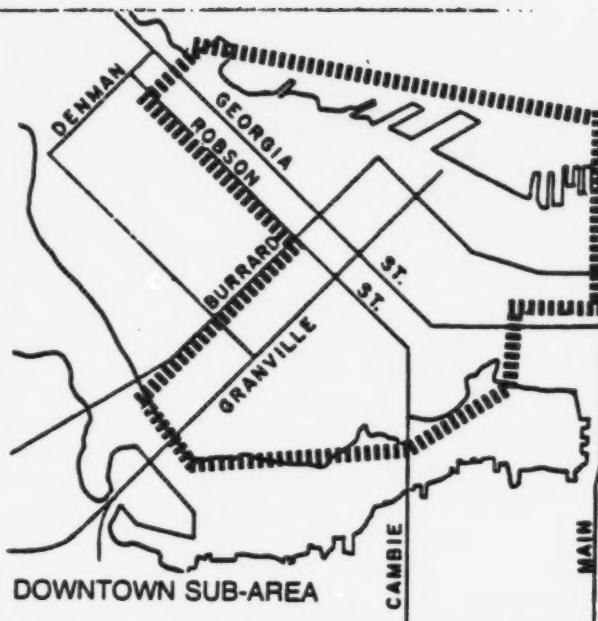
Forecasting future housing and transportation demands requires good estimates of both present and future downtown employment. In last April's Quarterly Review we reported on the results of a survey of employment in newly-built office buildings. The results of this survey indicated that the average floor-space-per-worker (FSW) ratio* for new office buildings was considerably higher than the ratio that we had been using to estimate downtown office employment. This implies that our previous employment estimates may have been too high. In order to better understand employment and its relationship to building space, a consulting firm (the IBI Group) was engaged to carry out a more comprehensive survey in late 1981.

The purpose of the survey was to produce estimates of employment in building space devoted to different economic activities (office, commercial, industrial, automotive, hotel, hospital, educational, and institutional activities) for three sub-areas within the core. In the case of hotel, hospital, educational, and institutional activities, it was possible to acquire employment data by interviewing all employers. In the case of the other activities this was not possible, so a sampling approach was used. Taking employment information from employers in the buildings selected in the sample, an average FSW ratio was calculated for each of the activities. These ratios were then applied to our estimates of total amounts of space (as of mid-1981), adjusted for vacancy rates and errors found in the sample, to produce estimates of employment in each of the activities.

Estimates for the Downtown

The survey found that office space, which accounts for just over half the building space in the downtown, has the lowest FSW ratios — 234 square feet per worker. This means that office space is the most intensively used space, generating a greater proportion of total employment than would be expected from its share of total building space.

*The FSW ratio expresses the average number of net rentable square feet occupied by a worker. Employment refers to all workers, including managers and employees, full-time and part-time, and people who normally report to work at core locations whether or not they remain on the site for the full work day.



Our consultant indicates that variation in FSW ratios in office space is unrelated to building age. However, there is some variation in the space consumed by offices with different functions. For example, as a group, law firms consume more space than the average, while engineering firms generally consume less. These characteristics may influence overall office space consumption in the future. Technological change, an issue dealt with elsewhere in this issue, also could influence the way office space is consumed.

After office space, commercial building space is the next most intensively used by workers, as indicated by the ratio of 403 square feet per worker. This is the average amount of space consumed by workers in retail establishments. Personal services — from banking to restaurants — are included in this category of space.

Automotive activities were observed to have an FSW of 611 — almost as space-consuming as the industrial category, which has an average FSW ratio of 676. Automotive and industrial buildings exhibit the widest variation in FSW ratios because there is such a wide range of activities covered by these space categories. The industrial category, for example, includes space-intensive activities such as garment factories and jewellery manufacturers, as well as space-extensive activities such as warehousing.

Office workers now constitute roughly 70 percent of downtown employment. This is a considerable increase over 1971 when office occupations accounted for about half of the downtown work force. The dominance of office employment is likely to increase in the future, given the high growth in office space and the relatively high intensity at which it is used.

Reliability of Estimates

The estimates of hotel, hospital, school, and institutional employment are fairly reliable as they are based on a complete survey of employers, but there are some problems with the other employment estimates. One source of error is the sampling error that results from making inferences about employment in all the space used for a particular activity on the basis of observations from a sample of that space. These errors can be calculated and are given in the table.

There are other sources of error, however, and a particularly important source is the accuracy of our estimates of total floor space. The estimates have been adjusted by the vacancy and error factors established for the sample, but it was not possible to adjust for

underestimation of the total floor space in each activity (caused by omissions from our file of building space). In addition, itinerant workers such as construction crews have not been included in the estimate of total employment.

For these reasons, it appears that the employment estimates generated from the survey likely underrepresent the actual number of workers. Consequently, the estimates should be regarded as preliminary in nature. Work is under way to check the accuracy of the building file and to correct it. This will permit comparison of current levels of employment with past levels.

The FSW ratios established by the IBI survey will be used in future employment estimates. The survey confirms that the office FSW ratio has been increasing over time. The figure of 234 square feet per worker is comparable to that found in the previous survey of new space (an FSW of 233 when adjusted to be consistent with the definition of employment used in the IBI study), but it is considerably higher than the ratio of 203 established by a 1974 survey. This would imply that the dramatic increase in downtown office space over the last decade has not led to proportional increases in office employment.

Unfortunately, the meaning and the future implications of this increase in the office FSW ratio are not straightforward. At least four factors could be operating to produce the increase. First, it could be the result of changes in the intensity with which space is being used by office activities. Secondly, it could be the result of changes in the mix of office activities in the downtown, as different types of activity differ in their FSW ratios. Thirdly, changes in leasing practices could be inflating the ratios. An increase in the tendency of firms to lease entire floors would mean that corridor space would become included in net rentable space. Finally, the change could be a result of differences in the rate of economic growth over time. In periods when economic growth is high, or anticipated to be high in the future, firms may increase the space they occupy, initially over-consuming space in the anticipation that they will take on more employees.

As it is probable that each of these factors is operating, the next task is to try to identify their relative importance. We can then interpret past changes more reliably and speculate more intelligently about possible future change in office FSW ratios.

Joe Stott

DOWNTOWN EMPLOYMENT 1981

	FSW	No. of Workers (preliminary estimate)	Sampling ¹ Error
Office	234	67 400	± 4%
Commercial	403	17 600	± 7%
Industrial	676	5 700	±17%
Automotive	611	400	±25%
Hotels	—	3 600	—
Hospitals, Schools, & Institutions	—	600	—
Total Employment	—	95 300	± 3%

¹ At 95% level of confidence

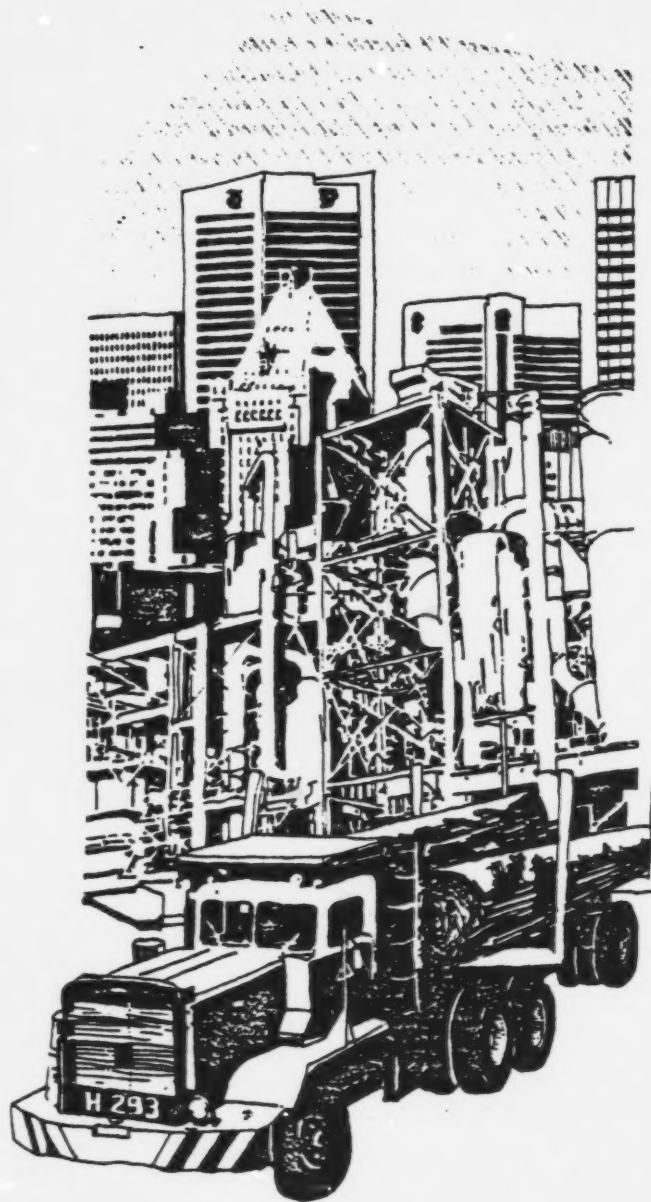
The Provincial Economy and Downtown Office Space

As part of the Coreplan effort we have explored a number of methods for forecasting future office construction in the downtown. One of the most promising has been a simple mathematical model which describes the level of office space (measured in square feet) as a function of the relative health of the B.C. economy (measured in dollars of real provincial product).

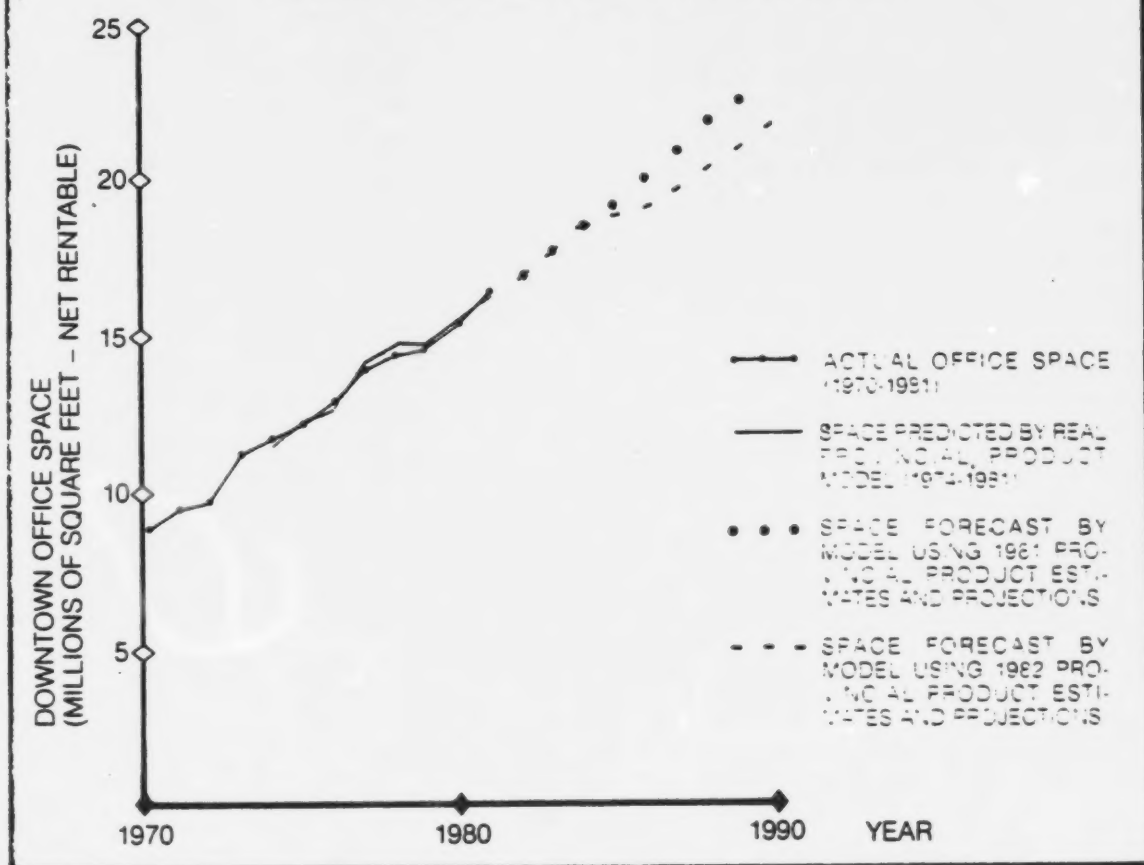
A Four-Year Lag

Specifically, we have found that the state of the provincial economy during any year seems to be a pretty good predictor of the amount of office space which will come on the market four years later. We suspect that it takes the development industry about four years to recognize a shift in office space demand generated by changes in the provincial economy, to arrange for sites, to produce the appropriate plans and designs, to obtain the necessary permits, and then to construct and lease office buildings to meet that demand. When the provincial economy slows down, it also seems to take about four years for the momentum of previous commitments to ebb. We have also observed that vacancy rates in Vancouver office market have traditionally been characterized by four-year cycles of feast and famine.

The graph on the next page shows that the office space growth predicted by our real provincial product model has closely tracked actual office growth between 1974 and 1981, the period for which we have good, consistently-tabulated historical data. The graph also shows two forecasts of future downtown office space that we have made using this model. The first, represented by a dotted line, was generated in the spring of 1981 using real provincial product estimates and projections produced by the B.C. Ministry of Finance as background to the 1981 B.C. budget. This was a time of relative economic ebullience, and both the Province's product projections and our resultant space forecasts reflected significant optimism for the remainder of the decade. According to this forecast, office growth for the



Downtown Vancouver Office Space Forecasts



1980s would exceed the growth of the 1970s by at least 1.3 million square feet, or the equivalent of more than three new Vancouver Centre (Scotia Tower) buildings.

The second forecast, represented by a dashed line, was produced in the spring of 1982 using data prepared for the 1982 B.C. budget. It reflects the significant downturn in the provincial economy which has occurred since last spring, as well as an accompanying reduction in optimism about the future. Last year, the Ministry of Finance was projecting long-term annual growth rates in excess of four percent. This year, the long-term rates are down to about three and a half percent, and the short-term rates are much lower than that.

Although momentum will keep office construction high for the next few years, this lower forecast indicates that the increase in office space over the next decade

may be over a million square feet less than we had anticipated last year at this time. If the Ministry of Finance projections hold and our model remains accurate, the total amount of space added during the 1980s will just about equal the amount of growth during the 1970s. But what news will next year's provincial budget bring? If the downturn persists, next year's office forecast could be lower. If the economy recovers, then we could return to a high, and maybe even an accelerating, growth trajectory. These are volatile times.

There are a number of problems, both conceptual and statistical, with the simple forecasting model we are using, and all results should be interpreted with a great deal of caution. Still the model does alert us to some important possibilities for the next decade. Our planning must take these into account.

Ted Droettboom

Just Another Office Building?

The addition of a new office building to Vancouver's downtown changes the city in many ways, some more subtle than others. The most obvious influence is the architectural appearance of the new building. More subtle than the individual image of any new structure are the urban design aspects: The way a new building relates to the street, its neighbours, and proximate amenities, creates new feelings about the immediate area in which it is located.

Even more subtle are the influences on the larger urban systems that support office activities and the employees who work in office buildings. New workers need to live somewhere, and they have to get from their homes to work and back again. The effects on housing and accessibility that result from growing downtown employment are a central concern of our efforts to develop the Coreplan. One way of showing these wider effects is to look at the impact of a hypothetical new office building.

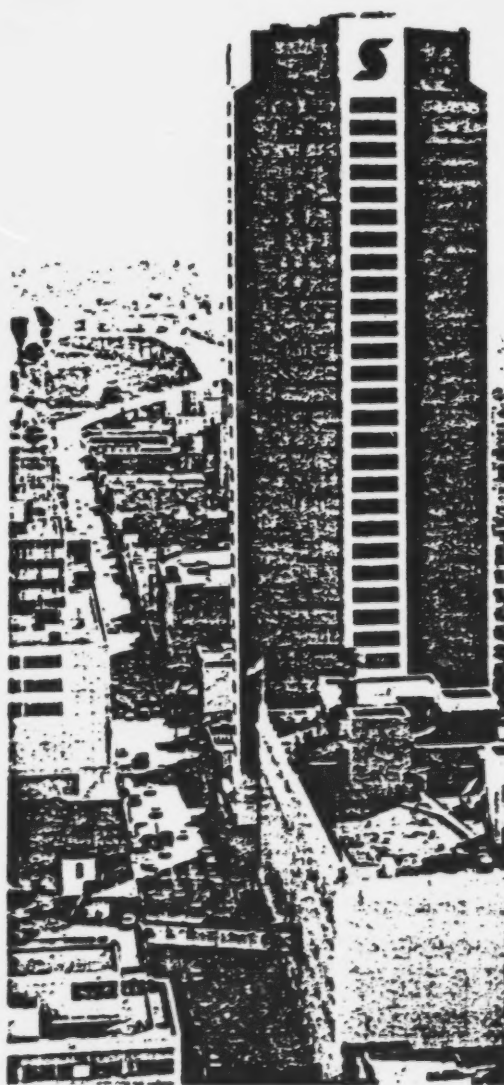
A Hypothetical Example

A new downtown office building commonly consists of 150 000 to 250 000 square feet of building space. There are a few smaller projects and one much larger now underway, but on balance, an office project of 200 000 square feet is not atypical of office developments proceeding in downtown Vancouver at present.

To get an image of the size and bulk of such a structure, consider that the IBM tower at Granville and Georgia contains 217 000 square feet and that the Daon building at Hastings and Burrard contains 213 000 square feet. These buildings are half the size of the Bank of Nova Scotia tower at Georgia and Seymour, and only a third as big as the new Bentall IV tower at Melville and Thurlow.

Using results from our Coreplan research, we can estimate the likely changes in Vancouver that could be anticipated once our hypothetical 200 000 square foot building is occupied. From our knowledge of existing overall housing and transportation characteristics, it is possible to make some inferences about employment, housing, and transportation impacts.

When the 200 000 square feet of office space is occupied, we can expect 860 workers to fill this space.



Based upon present residential characteristics, we have the following expectations about where these workers would live, assuming that they represent a net increase to the labour force:

- 130 workers will live on the downtown peninsula creating a demand for 130 dwelling units, almost all in the West End.
- 410 workers will live somewhere else in the City of Vancouver, creating a demand for 330 dwelling units.
- 320 workers will live outside the City of Vancouver, creating a demand for 250 dwelling units in the surrounding municipalities.

The present travel pattern of downtown office workers leads us to the following expectations about commuting impacts:

- 660 workers will cross the downtown peninsula boundary by vehicle during the 7-9 a.m. peak period. The remaining 200 workers will either walk to work, travel outside the peak period, or be on vacation, sick, or otherwise absent from work.
- 315 of these morning peak period travellers will probably use public transit to get to work.
- 345 of the peak period travellers will ride in 260 private vehicles.

These workers will create demands for other services that are less readily quantifiable. Workers will need many services like stationery and other supplies, mail, telephones, couriers and other communication services, and machinery servicing and repairs, not to mention the need to fill all their empty stomachs at lunch time.

Some Characteristics Could Change

Now some of these housing and travel characteristics could change. For example, drivers frustrated by increasing traffic congestion during the morning peak period could decide to travel either before or after rush hours. And because the City's zoning by-law limits the maximum number of on-site parking spaces in our

hypothetical office building to 200 spaces, some of the drivers who are anticipated to park off-site could decide to catch a ride with someone else. Of course, both of these types of commuters could switch to transit to get to and from work.

The increasing attractiveness of downtown living could encourage more of our hypothetical office workers to live within walking distance of work. In some areas within the downtown a bonus is offered office developers who can incorporate residential uses within their projects. The table on page 17 shows that several mixed-use projects involving residential accommodation are at some stage in the development pipeline. The addition of residential units to the downtown can reduce the demands placed on housing elsewhere in the city and region, and it might help reduce the travel demands placed on the city's transportation system.

Naturally, any particular 200 000 square foot office building that is actually constructed will almost certainly exhibit characteristics that differ from our hypothetical building. But considered in the larger context of the basic urban systems that function in Vancouver, we can anticipate the likely influences on our city resulting from continued downtown office development. Taken together, all of the office buildings downtown influence the way we work and live in Vancouver.

Joe Stott



Comparing Downtown Office Districts

The downtown office district of any large North American city makes a great contribution to the city's skyline and is generally one of the strongest images of the city that residents and visitors carry with them. Tall office towers adorned with corporate symbols provide even the most casual observer with an idea of where the centre of town is. A dense cluster of downtown office buildings contributes to an observer's perception of the size and status of a city. But the size of the downtown is not necessarily a true indication of the size of the city or metropolitan area, and vice versa.

In order to better understand the relative importance of Vancouver as an office centre, we have compared the sizes of the downtowns and metropolitan areas for a number of the largest North American cities. While this comparison is rather general, it does provide an indication of the kind of city we are in comparison to the others, as well as providing some basic clues about the kind of city we might become as downtown office space continues to increase.

Total metropolitan population and total downtown office floor space have been compared for twenty of the largest standard metropolitan statistical areas in the United States, and for the three largest census metropolitan areas in Canada. By plotting the population and office space of the sample cities on a graph and using a statistical routine (least-squares fit regression), it is possible to calculate the office space one would expect to find at the centre of a metropolitan area of any given population.

Some cities have downtown office districts smaller than might ordinarily be expected, given the size of their metropolitan population. For example, a city with a blue-collar reputation like Detroit has a downtown office district not much larger than Vancouver's, even though Detroit has almost four times the metro population. On the other hand, some cities have massive downtown office districts, with office concentrations much larger than might be expected when metropolitan population is considered. White-collar cities, like New York City and Washington, D.C., have more downtown office space than would be predicted by studying



population figures for their metropolitan areas.

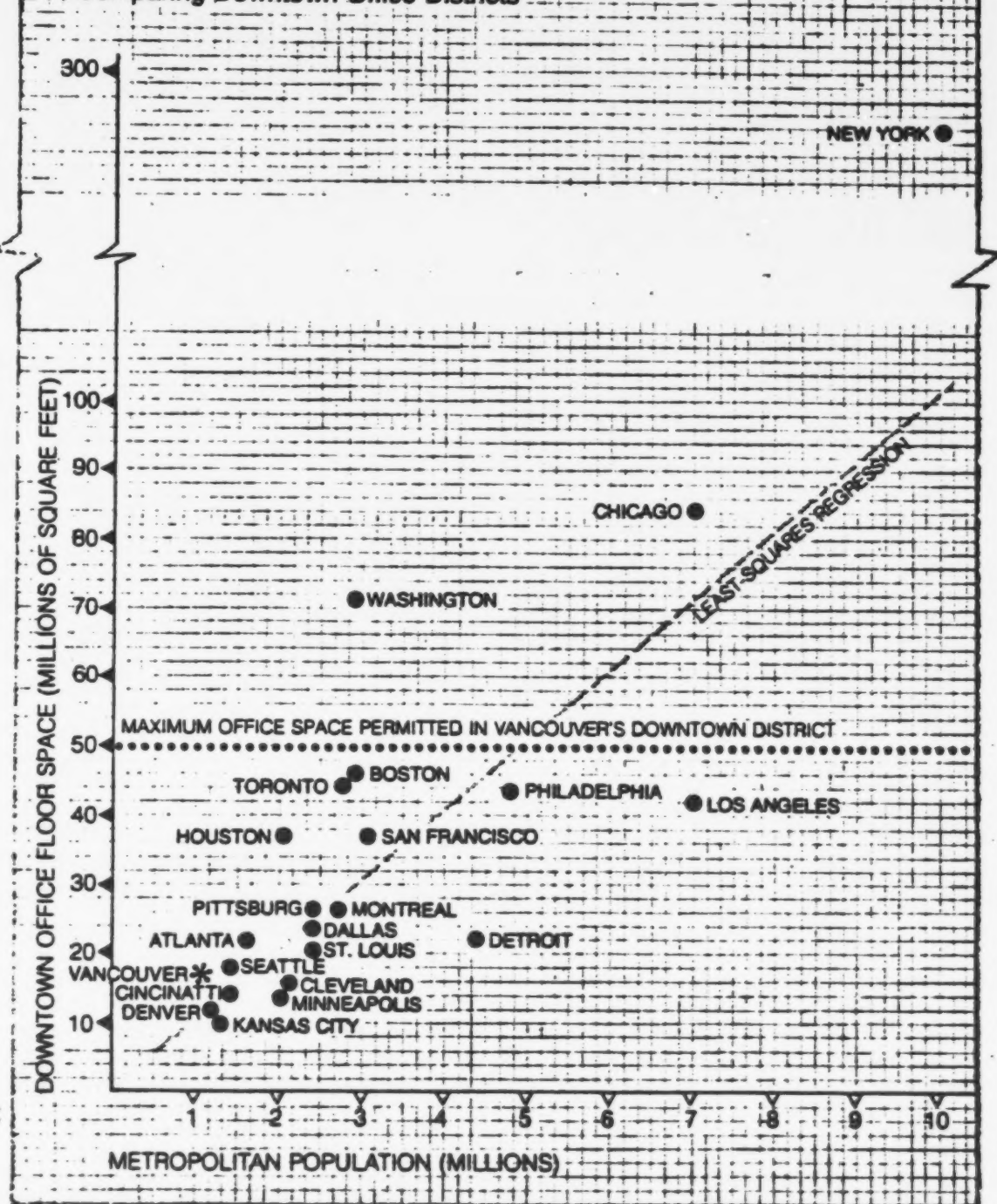
In addition to differences in the economic structure of the cities being compared, the degree of decentralization of office stock in a metropolitan area can contribute to a downtown office district smaller than might be expected. Many visitors to sprawling Los Angeles make jokes about never seeing downtown L.A.

By comparison with the leading metropolitan cities in the United States and Canada, Vancouver is relatively small in terms of both downtown office space and metropolitan area population. What is interesting is that Vancouver has roughly 30 percent more downtown office space than might be expected in a metropolitan area of its size. Furthermore, the Zoning and Development By-Law would allow Vancouver's downtown to have as much office space as there is now in the downtowns of Boston, Toronto, Philadelphia, or Los Angeles. If future office development materializes as projected from the trend set in the seventies, in twenty years Vancouver could have more downtown office space than San Francisco has today.

Over the same period, the population of Greater Vancouver is not expected to grow as fast as office space. The population of metropolitan Vancouver is expected to remain considerably less than San Francisco, Boston, Toronto, or Los Angeles. In all probability then, Vancouver will develop a reputation as a white-collar city if the increasing concentration of downtown offices continues.

Joe Stott

Comparing Downtown Office Districts



Downtown Peninsula Growth and Accessibility

Vancouver's downtown is an intensely developed area that functions as the centre of finance, corporate and government administration, retailing, entertainment, and business services for Canada's third largest metropolitan area. The proper functioning of the downtown is dependent on a number of factors, including its internal accessibility and access to it from the rest of the metropolitan area.

The size, vitality, and growth of downtown produce substantial economic, social, and other benefits, but they also impose considerable transportation requirements. This article examines transportation access to the downtown peninsula and the travel demands which have accompanied peninsula growth during the 1970s. It also identifies factors that are likely to affect travel demand in the next decade or two, a subject treated in greater detail in the next issue of the *Quarterly Review*.

What is Accessibility?

Accessibility is a matter of getting from one place to another easily. It is determined by how conveniently land uses are located in relation to each other, and how easy it is to reach them through the transportation system.

There is no single simple measure of accessibility. One measure that most people can easily understand is travel time. Figure 1 shows, for example, that in 1977 it took just under twenty minutes to commute to downtown from Champlain Heights in south-east Vancouver during an average morning peak period (7 - 9 a.m.) while it took over forty minutes from Port Coquitlam. These travel times are affected not only by distance but also by the characteristics and operating conditions of roads and other transportation facilities.

A measure used by traffic engineers to evaluate these characteristics and conditions and to plan new facilities is the level of service. By relating traffic volume to street or roadway capacity, a transportation linkage can be described as operating at a certain level of service.



Fig. 1 Travel Time to Downtown Vancouver, Morning Peak Period, 1977

Travel time is shown in minutes along the time from parking areas to the intersection of Granville and Georgia, March - April 1977.

There are six levels of service, ranging from best to worst service and designated by the letters A through F.

These levels are illustrated in Figure 2. Level of service E represents saturation capacity, or full utilization of available capacity. Maximum traffic volume is carried at this level of service but at very low travel speed. Level of service C defines typical urban traffic conditions, and is commonly referred to as "practical capacity". Traffic volume at this level ranges between 75 and 85 percent of saturation capacity. This is seen by traffic engineers as ensuring maximum use of facilities at speeds acceptable to drivers.

At progressively lower levels of service, traffic volume increases, spacing between vehicles falls, and travel speed decreases. At high levels of service with low traffic volumes, a small increase in volume does not have much impact on travel speed. However, at low levels of service with volumes approaching saturation capacity, small increases in volume considerably reduce travel speed.

The accessibility of the downtown peninsula can be fully described only through a wide variety of measures. However, the level of service, measuring the ease of movement over a segment of roadway between two locations, offers a practical indicator of accessibility. The level of service on the access corridors serving a particular location can be used to conveniently describe important aspects of that location's accessibility.

Fig. 2 Levels of Service on a Typical Arterial Highway

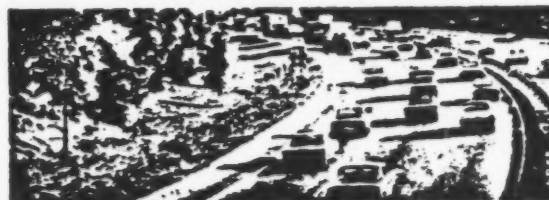
This type of road most closely approximates the characteristics of the Lions Gate Bridge and Stanley Park Causeway, the Georgia and Dunsmuir Viaducts, and the Burrard and Granville Street Bridges.



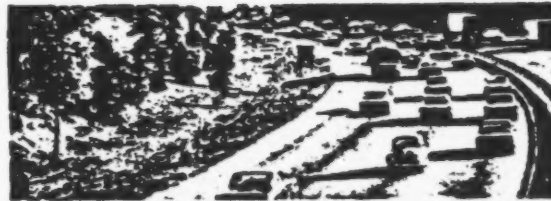
A. Free-flowing traffic, with low volumes and high speeds. Traffic volume reaches up to 60 percent of saturation capacity.



B. Stable traffic flow, with operating speeds restricted somewhat by traffic conditions. Traffic volume reaches up to 75 percent of capacity.



C. Stable flow, but speeds and manoeuvrability more restricted. Traffic volume reaches up to 85 percent of capacity.



D. Unstable traffic flow, with tolerable operating speeds. Traffic volume is about 10 percent heavier than at Level C and back-ups occur for extended periods.



E. Forced traffic flow at lower operating speeds than at Level D but still moving. Traffic volume is at or near saturation capacity.



F. Stop-and-go traffic flow at very low speeds and volumes can fall far below saturation capacity. With back-ups extending from one intersection to affect adjacent intersections, congestion can spread from street to street, causing total breakdown.

Access to the Downtown Peninsula

Vancouver's downtown is concentrated in a compact area just over one square mile in size on a small peninsula that also contains the West End, metropolitan Vancouver's highest density residential neighbourhood. The geographical setting forces traffic through a limited number of access corridors. These include four bridge crossings, and a few grade streets and the Georgia and Dunsmuir Viaducts on the "downtown neck". Further access to the peninsula is provided by

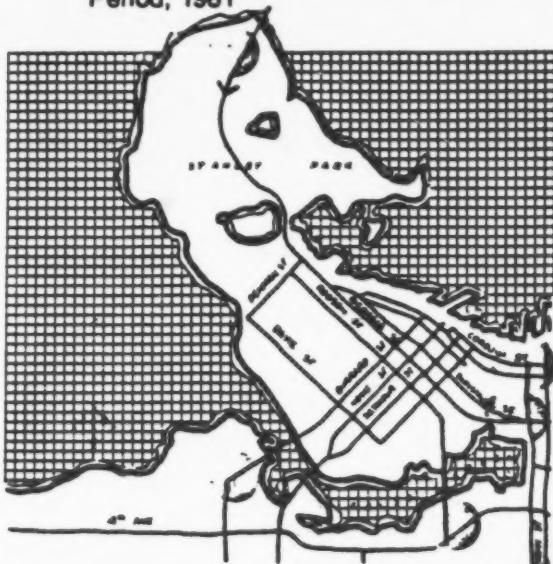
SeaBus that operates between Lonsdale Quay in North Vancouver and the central waterfront.

The total capacity of these access corridors is estimated to be about 45 200 vehicles at levels of service

E or saturation capacity. In 1981 the total number of vehicles entering the downtown peninsula during the average morning peak period was about 33 800*. An estimated 11 percent of these were commercial and service vehicles, including transit buses. About 17 percent of all motor vehicles entering the peninsula were on

*The 1981 traffic and trip figures used in this article are preliminary estimates.

Fig. 3 Level of Service on Access Corridors to the Downtown Peninsula, Morning Peak Period, 1981



	Traffic Volume	Traffic Capacity	Volume to Capacity	Level of Service
1. Lions Gate	7,300	7,000	105%	F
2. Downtown Neck Streets	8,400	11,600	72%	B
3. Dunsmuir Viaduct	4,600	7,200	64%	B
4. Cambie Bridge	3,300	3,400	99%	E
5. Granville Bridge	5,200	8,800	59%	A
6. Burrard Bridge	4,900	7,200	68%	B

through trips to other destinations (e.g. from the North Shore to Central Broadway).

Traffic volume into the downtown peninsula during the morning peak period is estimated to be about 75 percent of total saturation capacity on the access corridors to the peninsula. This represents an overall level of service C. However, Figure 3 shows that levels of service on the individual access corridors are uneven. The highest is enjoyed on the Granville Street Bridge. By contrast, the Cambie Street Bridge and Lions Gate Bridge suffer a level of service F. This means stop-and-go traffic, with frequent and extensive backups.

Between 1971 and 1981, average morning peak period traffic volume increased about 18 percent. Capacity on the access corridors was also increased over this period. In the early 1970s the new Georgia and

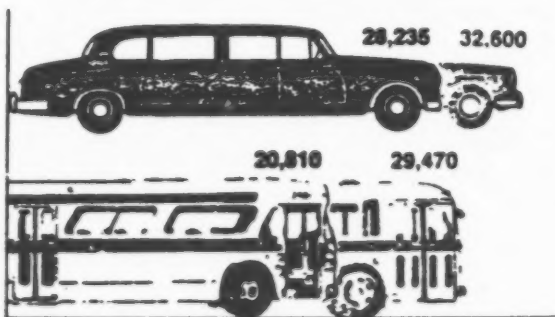
Dunsmuir Viaducts were opened. More recently there have been other improvements at the downtown neck. Overall capacity is estimated to have increased by about 12 percent. However, growth in traffic volume was greater than the increase in capacity. Traffic volume increased from 71 percent of capacity in 1971 to 75 percent in 1981, and the overall level of service fell from B to C.

Travel to the Downtown Peninsula

It cannot be automatically concluded from the preceding discussion that accessibility to the downtown peninsula has deteriorated over the last ten years. While both the access corridors and the street system on the peninsula itself have become more congested with vehicles, it must be remembered that it is the movement of people that is of prime concern.

If through trips are excluded, an estimated 62 000 persons entered the downtown peninsula during an average morning peak period in 1981. This is an increase of about 27 percent since 1971, a much larger increase than the growth in vehicular traffic. This is largely because two-thirds of the travel growth has been accommodated by increased transit ridership. As Figure 4 shows, transit trips increased by 42 percent while trips by private motor vehicle increased by only 16 percent. As a result, transit's share of peak period trips increased from 42 percent in 1971 to an estimated 48 percent last year.

Fig. 4 Total Person Trips Entering Downtown Peninsula, Average Morning Peak Period, 1971 - 1981.



Through Trips 9,170 9,170

While transit system capacity was expanded in the early seventies and transit operations were improved in recent years, the bus system is now described by GVRD planners as operating at or beyond capacity during peak periods, particularly on the downtown peninsula. On most routes, buses operate with standing loads. On some routes buses are so crowded that they must pass up riders at some stops.

In summary, there has been substantial growth in morning commuter travel to the downtown peninsula during the 1970s in spite of limited access. Increased travel demand has been accommodated through an increase in the capacity of the access corridors to the peninsula, a decrease in the level of service on these corridors (e.g. increased travel time), an increase in transit system capacity, and an increase in transit ridership.

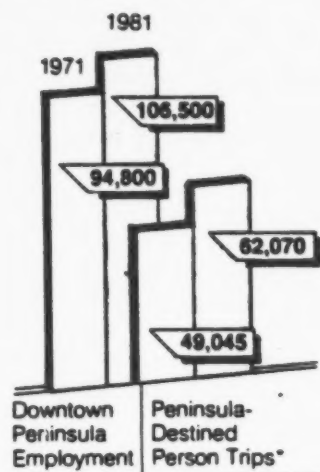


Employment and Travel Growth

If the proper functioning of downtown is partly dependent upon access from other parts of the metropolitan area, and if this access is limited, questions then arise about the increase in travel demand that will be generated by future growth on the downtown and the ways in which this demand can be met.

Traffic surveys in the mid-seventies showed that as much as 90 percent of peak period travel to the downtown peninsula is generated by workers commuting to their jobs. Employment is thus a major determinant of travel demand. However, during the 1970s the amount and rate of travel growth was much greater than employment growth. As Figure 5 illustrates, the number of jobs on the downtown peninsula

Fig. 5 Downtown Peninsula Employment and Travel, 1971 - 1981.



* Average Morning Peak Period (7 - 9 a.m.)

grew about 12 percent while the number of persons entering the peninsula (but not including roughly 9 000 through trips) increased about 27 percent. In 1971 there was about 1 commuter between 7 and 9 a.m. for every 2 jobs. By 1981 there were 1.2 commuters for every 2 jobs.

Why did morning commuter travel grow more rapidly than total employment? Plans and policies adopted in the mid-seventies included provisions to allow and encourage more housing in and around the downtown. A larger labour force residing on the downtown peninsula would have moderated the growth of commuter travel. However, 1981 census results indicate no significant increase in the downtown peninsula population during the 1970s. This explains in part why the number of commuters would grow at least as much as the number of jobs.

One reason why commuter travel might have grown more rapidly than total employment is that more people than before preferred to go to work between 7 and 9 a.m. This seems unlikely given increased congestion. An alternative explanation is that there might have been an increase in the number of jobs that require employees to arrive at work during the morning peak period.

There is some evidence to support this hypothesis. First, during the 1970s the composition of employment changed at the same time that total employment grew. As Figure 6 shows, there was a substantial increase in office employment and a sizeable decline in non-office jobs. Office jobs were about 53 percent of all jobs in 1974 and about 60 percent in 1981.

Second, common sense and experience suggest that most employment in offices follows the 8-to-4 or 9-to-5 pattern of work hours, while much non-office employment in hospitals, hotels, stores, and factories tends to be characterized by non-standard hours and shift work. Although there is no survey data to confirm our figures, we have estimated that there are about 8 commuters during the morning peak period for every 10 commuting office workers, and about 3 for every 10 commuting non-office workers.

Insofar as these estimates seem reasonable, it appears that the substantial shift from non-office to office employment during the 1970s, together with the different patterns of working hours for these two types of employment, explain the large increase in commuter travel that accompanied the smaller increase in downtown peninsula employment. This finding has important implications. The transportation requirements of a growing downtown would be considerably

underestimated if projections of future travel demand and its transportation requirements were based on employment growth but ignored changing employment composition. As most employment growth downtown is likely to be in the office sector, it might be expected that commuter travel will grow more rapidly than total employment.

Accessibility in the Future

Will access to the peninsula be adequate to meet the future needs of a growing downtown? That depends in large part on future travel demand and the future capacity of the transportation system serving that demand.

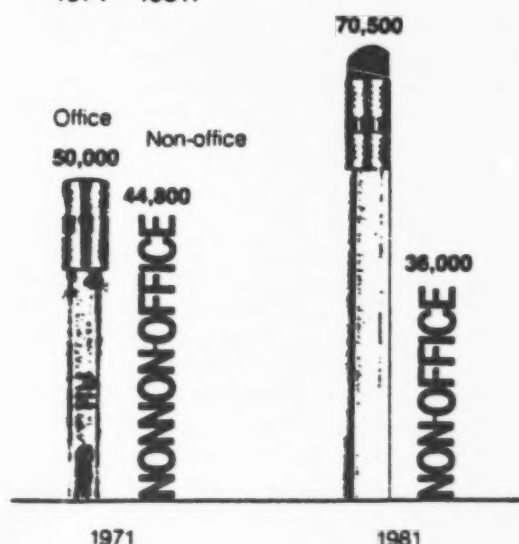
Growth in morning peak period travel demand during the 1970s was closely related to growth in employment, change in employment composition, and relatively little change in the resident peninsula labour force. These factors will also operate during the 1980s. However, residential development at B.C. Place and in some parts of downtown can be expected to increase the resident labour force on the downtown peninsula, reducing the travel demand generated by new office space and employment. Nevertheless, most of the additional employment will likely require commuting from other parts of the city and metropolitan area.

Growth in travel demand during the 1970s was accommodated in several ways. These included an increase in the vehicular capacity on the access corridors to the downtown peninsula, acceptance of a slightly lower level of service on these corridors, some increase in transit system capacity, and a substantial shift to transit ridership. What combination of these will occur during the 1980s remains to be seen. A significant role will be played by ALRT that commences operation in 1986.

Whether or not accessibility to the downtown peninsula can be maintained in future depends on increases in capacity in the transportation system providing access to the peninsula and on the new demands placed upon that system. If a gap between the two is likely, then adjustments to travel demand or capacity may be necessary to prevent unacceptable deterioration in access to the downtown peninsula. These prospects will be the subject of an article in the next issue of the *Quarterly Review*.

Phil Mondor

Fig. 6 Employment Downtown Peninsula, 1971 - 1981.



Future Downtown Growth and Accessibility

Office space construction in downtown Vancouver reached a record level last year, and despite a widespread economic slump and a short strike this summer, there continues to be considerable building activity this year. At the end of June, six million square feet of office space were either under construction or proposed.

There has been more than enough building activity in downtown Vancouver in the last two years to raise some anxious questions about further office space construction. Will the market support it? Will standards of urban design and environmental quality survive it? Will the existing infrastructure of services, amenities, and transportation facilities accommodate it?

Continued growth on the downtown peninsula is feasible only if the peninsula remains accessible. An article in the last issue of *Quarterly Review* described the considerable travel demands that accompanied office employment growth during the 1970s. This article examines future employment growth, the travel demand it will generate, and the increases in the capacity of the transportation system that may be necessary.

Growth Projections

Several studies have recently been completed in preparation of a Coreplan to manage further growth and change in Vancouver's core. These investigations included twenty-year projections of trends in office space construction, employment growth, and housing. It is unlikely that these projections accurately forecast what will happen in the future, for they assume that trends will not be interrupted by external forces and policy changes. But our objective is not to forecast. Rather, it is to anticipate some of the consequences of continued growth, especially for travel and transportation. City Council can then be more informed about some of the potential costs of accommodating growth and about the interventions that could avoid or reduce those costs.

Our projections indicate that office space on the downtown peninsula could increase from 16.5 million square feet at the end of 1981 to somewhere between a low of 24 and a high of 48 million square feet by 2001.



The average of these projections forms the basis of our employment projections. This average is consistent with short-term forecasts based on projects under construction or in the development permit "pipeline". It is also consistent with forecasts based on projected growth in real provincial product (with which office space construction is highly correlated).

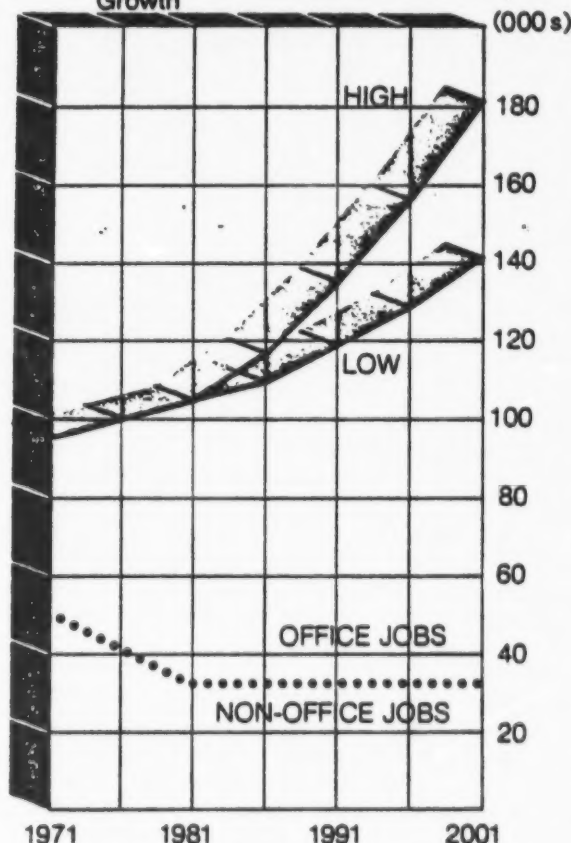
In order to translate office space growth into employment growth, we have to take into account the average amount of floor space per worker (FSW). Between 1971 and 1981, office space grew by 72 percent but office employment grew by only 39 percent. Office employment did not grow as much because the average FSW increased.

Uncertainties concerning office automation make it difficult to even hazard a guess about what will happen to the average FSW in future. For this reason our single projection of future office space is followed by two projections of office employment. A LOW projection, based on continued increase in FSW, indicates 40 500 additional office jobs by 2001. A HIGH projection, which assumes no change in FSW, indicates 81 000 additional jobs.

To complete the employment projections, non-office employment must be considered. This employment is estimated to have decreased about 21 percent between 1971 and 1981. It is assumed that the number of non-office jobs will remain unchanged over the next two decades. Any further losses that might occur are expected to be offset by new non-office jobs at B.C. Place and other population-serving activity centres.

Projected total employment on the downtown peninsula, shown in Figure 1, will therefore grow largely

FIG. 1 Downtown Peninsula Employment Growth



because of what happens in the office sector.

Commuting

Employment on the downtown peninsula generates considerable travel. During the morning peak period (7-9 a.m.), about 90 percent of the travel to the downtown peninsula is journey-to-work travel. In addition to the commuting at the start and end of each work day, there is travel by shoppers, couriers, people on personal business, employees on company business, and so on.

Commuting during the morning and afternoon rush hours generally imposes the greatest demand on the transportation system. Travel in the daytime period between the morning and afternoon rush hours generally has a smaller impact on the access corridors to and from the downtown peninsula, but it imposes a greater burden on circulation within the peninsula. In the analysis that follows it is travel during the morning peak period that is the focus of attention, primarily because it is easier to examine and because it is the accepted practice in most transportation planning.

The difference between the number of jobs on the downtown peninsula and the number of resident workers (people who both work and live on the peninsula) roughly determines the total number of commuters. On the basis of trends in residential construction, together with housing potential at B.C. Place and in other parts of the downtown peninsula, it is projected that the number of resident workers will grow from an estimated 15 600 in 1981 to 24 000 in 2001. This number could be greater, but 1971 data indicated that only about 60 percent of the workers who live on the peninsula also work there.

While a greater number of resident workers will offset some of the travel demand generated by increases in employment, considerable commuting from other parts of the city and metropolitan area will be necessary. It is estimated that by 2001 projected employment growth will generate between 26 000 and 60 000 more trips during the morning peak period than there are at present, as shown in Figure 2.

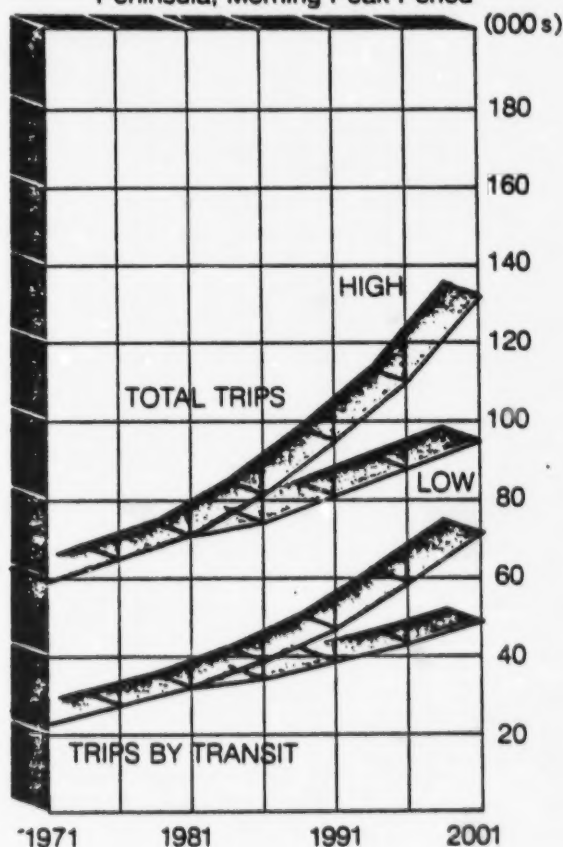
This 36 to 84 percent growth in morning peak-period travel is considerably higher than the projected 25 to 50 percent growth in employment over the next two decades. The reason for this is that employment composition is changing. Not everyone goes to work between 7 and 9 a.m., and it is office jobs that are more likely to begin during this period. Office jobs increased from 53 percent of total employment in 1971 to 66 percent in 1981. On the basis of projections, office employment could reach between 76 and 81 percent of total employment in 2001. As a result, there would be almost 8 commuters during the morning peak period for every 10 jobs in 2001, as compared to 7 in 1981.

Transit Ridership and Traffic

Between 1971 and 1981, morning peak-period

travel to the downtown peninsula on an average week-day grew by 13 000 trips. Transit's share of total trips

FIG. 2 Person Trips Entering Downtown Peninsula, Morning Peak Period



rose from 41 percent in 1971 to 45 percent in 1981. This means that about two-thirds of the growth in travel in the last decade was accommodated by transit. If this share of travel growth is maintained over the next two decades, then transit's share of total trips will climb to 51 percent by 2001 in the LOW projection, and to 55 percent in the HIGH. The number of transit riders would increase from 32 000 in 1981 to somewhere between a LOW of 49 000 and a HIGH of 71 000 around 2001 (see Figure 2).

The number of people who enter the peninsula by

private motor vehicle is projected to increase from 39 200 to somewhere between a LOW of 48 000 and a HIGH of 59 700. Assuming that there continues to be an average of 1.3 persons per vehicle, as has been observed in recent years, the number of private vehicles entering the downtown peninsula during the morning peak period would increase nearly 30 200 in 1981 to somewhere between a LOW of 36 900 and a HIGH of 45 900. The volume of total traffic, including service and commercial vehicles, would reach between 41 300 and 51 300 around 2001. (see Figure 3).

Transit Capacity May Be Inadequate

The accessibility of the downtown peninsula and the level of service experienced by people who travel to the peninsula will be affected by increased travel demand. What the effects will be, however, depends a great deal on the capacity of the transportation system.

The transit system providing access to the downtown peninsula is estimated to have a capacity during the morning peak period for about 32 000 riders, including 2 000 on the SeaBus. This system is operating at or very near full capacity at present, but some significant improvements are planned over the next few years. These include ALRT between downtown Vancouver and New Westminster, commuter rail between downtown and Port Coquitlam, and SeaBus expansion.

The ALRT system, planned to be in operation by 1986, is designed to carry 20 000 commuters during the peak period with potential for later expansion to 50 000 riders. However, the ALRT system is not primarily intended to substantially increase transit ridership or to accommodate significant growth in travel demand. Rather, it is meant to minimize the growing costs of operating and expanding regional transit services. It would do this by substituting an automated system for the many buses connecting outlying suburban areas with Vancouver's downtown. Freed from express service, many of these buses and their drivers would provide a collector service in suburban areas. It is also planned to retire a number of buses from service.

On the basis of present, relatively firm commitments to transit expansion, it is estimated that transit will have a total capacity to carry 50 000 riders during the morning peak period. This appears to be just about adequate to serve future transit ridership in the

LOW projection. However, if employment grows according to the HIGH projection, capacity would be exceeded around 1991 and an increase would be needed to serve an additional 20 000 riders before 2001.

Traffic Congestion Will Grow

Vehicular access to the downtown peninsula is limited to the Lions Gate Bridge, the three bridges over False Creek, and the viaducts and streets at the eastern neck of the peninsula. These access corridors have a total saturation capacity that could allow about 47 000 vehicles to enter the peninsula during the morning period. Practical capacity, allowing for reasonable speed and not too much inconvenience, is about 75 to 85 percent of saturation capacity.

During an average morning peak period in 1981, the traffic volume entering the peninsula was around 75 percent of capacity. It could reach 88 percent by 2001 in the LOW projection. In the HIGH projection, traffic volume could exceed capacity by about 9 percent (see Figure 3). A 22 percent increase in capacity could be

needed in the LOW projection to maintain the present level of service experienced by commuters. This is the equivalent of a Granville Bridge. In the HIGH projection, the capacity of two and a half such bridges would be needed over the next two decades.

Although there is discussion about a new Cambie Street Bridge, there are no firm commitments to increase the capacity of bridges and streets providing access to the downtown peninsula. The projected increase in traffic volume will therefore reduce the level of service for vehicles, including buses. Already the Lions Gate and Cambie Street bridges are operating near or in excess of saturation capacity. Travel time and speed will be affected and the journey to work can be expected to take longer.

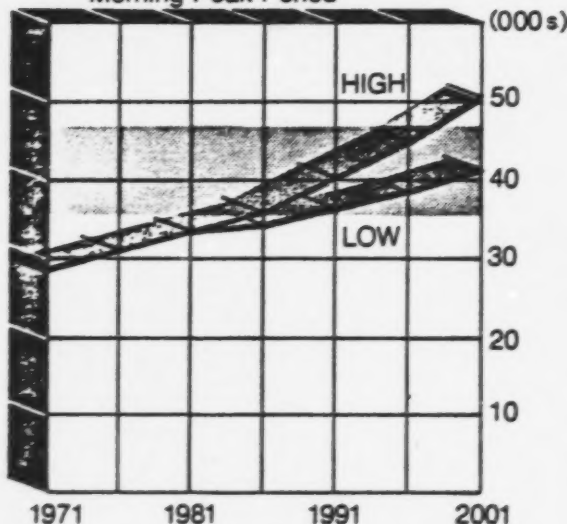
Coping With Increased Travel

The proper functioning of downtown depends in part on access to it from the rest of the city and metropolitan area. Increased congestion accompanying employment growth would seriously compromise that accessibility. It is also at odds with the desire for reduced auto congestion expressed in the Vancouver City Planning Commission's Goals for Vancouver.

If employment and travel continue to grow along the lines reported in this article, then something will likely have to be done about increased traffic. One means of controlling congestion and maintaining accessibility is to construct additional or wider access corridors to the peninsula to accommodate increased traffic. Increased commuter traffic would also significantly increase the amount of all-day parking required on the downtown peninsula. Finally, many improvements would be needed within the downtown peninsula to accommodate a much greater volume of internal circulation.

Additional traffic facilities are bound to be quite costly, and they may be resisted by much of the public. There is an alternative, strongly supported by citizen opinion expressed in Goal for Vancouver, and that is to emphasize transit in the development of future transportation in Vancouver. Insofar as automobile circulation does need some improvement, better management of existing facilities was preferred to the development of new roads or the widening of existing ones. Above all, it was preferred that the use of autos be discouraged and that "as transportation becomes more congested, em-

FIG. 3 Vehicles Entering Downtown Peninsula, Morning Peak Period



Included in the figures are commercial and service vehicle trips, together with vehicles on through trips. The toned area represents traffic volumes between 75 and 100 percent of the saturation capacity on the access corridors to the downtown peninsula.

phasis should be directed towards transit".

A transit-only solution to travel growth would entail more expansion of transit capacity than is now proposed. With LOW employment growth, the equivalent of a 50 percent increase in ALRT capacity would be needed between 1991 and 2001. With HIGH employment growth, the equivalent of a doubling of ALRT capacity would be required, with expansion commencing in the late 1980s.

More Transit May Not Be the Answer

A transit-only solution has four limitations which should worry us. First, 60 to 70 percent of all peak-period commuters would have to travel to work downtown by transit, as compared to an estimated 45 percent in 1981. This involves a substantial change in travel behavior that will quite likely be resisted by most people, who by and large prefer to retain the personal mobility and flexibility of a private vehicle.

Second, if it is to be effective, mass transit must be able to attract numerous riders. This requires corridors and concentrations of medium-to high-density population. Dispersed suburban populations are difficult to serve with conventional means of providing transit. In this regard, it is not yet assured that the ALRT line to New Westminster will attract enough riders to operate at desired capacity. And yet it is located through a corridor with higher population densities than can be found in other suburban areas.

Third, a transit-only solution may not be capable of serving all growing travel demands. If the problems identified above could be overcome, mass transit might be able to serve the increase in journey-to-work travel as downtown peninsula employment continues to grow. However, trips made for other purposes and at other times of the day will also grow considerably. Transit is not able to serve this kind of travel very well. Shopping trips, goods movement, and trips made for business purposes between work locations require a level of flexibility and mobility that most types of transit cannot provide.

Finally, mass transit is expensive to install and operate. The estimated capital cost of the ALRT line to New Westminster is \$750 million, more than three times the City's annual budget. The operating costs of transit are also quite substantial. Since it is unlikely that these costs can be fully recovered from revenues, sub-

sidies will be necessary from tax dollars or other levies.

These reservations about transit mean that other transportation alternatives should be included in a broader approach to maintaining downtown peninsula accessibility. Expanded transit service, all by itself, is not likely to cope effectively with the increased and diverse travel demands of a growing downtown.

Coping With Growth

The projections reported in this article indicate that continued growth in office space and employment will generate considerable growth in travel, and that increasing traffic and transit ridership will exceed the capacity of existing and proposed transportation facilities. If it is important to prevent deterioration of the downtown peninsula's accessibility in order to maintain its prosperity and vitality, then it will be necessary to address the transportation requirements of its continuing growth.

The most desirable approach to this task might be to look at the problem more broadly. Increasing the capacity of the transportation system could be viewed as but one of three broad alternatives for coping with growth. A second alternative is to increase housing potential and encourage residential development in parts of the city generously endowed with amenities and services and more easily served by transit than low-density suburbs. A third alternative is to put some kind of lid on downtown peninsula growth, a lid that would be allowed to rise as measures are adopted for coping with the consequences of growth.

There are many arguments for and against each of these alternatives. Each way of dealing with growth would affect different people in different ways. And in the long run, each alternative would very likely produce a different kind of city. Many questions have yet to be asked and many views considered before the City can more confidently approach its future. The Coreplan soon to be considered by Council is a strategy for developing this confidence.

Phil Mondor

Techniques for Managing Core Growth

Past issues of the *Quarterly Review* have reported research from the Coreplan project on the implications of potential growth at the city's centre. While continued core growth will be associated with a healthier economy and may mean more and better jobs for present and future Vancouverites, it could also involve substantial costs for the city and for other governments — especially in the provision of new transportation facilities. Accommodating core growth could also materially change the shape, feel, and quality of city life.

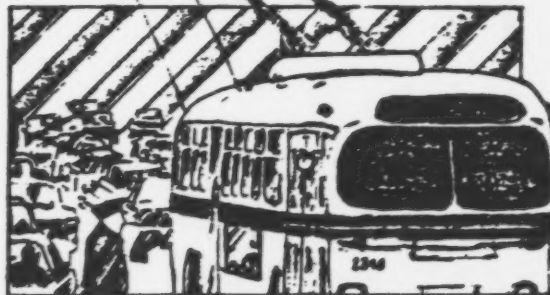
With careful planning and cooperation, there is a very strong likelihood that Vancouver could accommodate core growth without undue costs and without disruption of the good life. But what if government cannot afford the costs of core growth accommodation? What if the results of poorly accommodated growth threaten the livability which makes Vancouver such a special place?

What options does the City have to manage growth so that costs do not get out of hand and so that livability is maintained? Can growth be timed in pace with the provision of required public facilities? Can the City equitably recoup some of the benefits of growth to pay the costs of those facilities?

As a start on answering these questions, City staff have reviewed a variety of growth management techniques used by other governments or suggested in an emerging body of literature. Eight types of technique have been identified as having some relevance to the Vancouver core.

Limits on Ultimate Development

Many cities, including Vancouver, regulate development through height or density limitations in their zoning or development by-laws. Height and density limitations in Vancouver have been established primarily to regulate, albeit imperfectly, the bulk of buildings, the relationship of buildings to one another, the amount of activity that occurs at particular locations, and the look and feel of overall development. Coincidentally, by limiting the amount of floor space in individual



projects, they also establish the level of floor space to which the entire area can ultimately be built. Frequently, however, this ultimate development has been a secondary concern.

Zoning by-laws embody a troublesome dilemma: while it is all right to have some buildings built to the maximum density it would not generally be desirable to have the entire area built to that maximum. But how does one choose fairly which sites get the maximum and which do not? There is usually no objective way to choose among sites. For most public purposes, it really does not matter which sites are fully developed and which are not, as long as they do not all meet the maximum.

Generally the dilemma is handled by giving every site in the area the maximum density and allowing the market to produce variation by self-regulating the timing of development. Usually, many sites remain underdeveloped until there is sufficient demand to develop them to their maximum. This generally works out well in the short term, but obviously leads to difficulty in the long term. If every site in the Vancouver core were developed to presently permitted densities, city systems would be overloaded.

Most cities, like Vancouver, have not yet had to confront the long term. Depending on the pace of development, Vancouver may never meet it. But, if the development trends of the 1970s were to persist, the long term could be as few as fifteen to twenty-five years away.

Toronto faced a problem similar to Vancouver's and decided to reduce long-term densities to a level which could be more readily handled by the existing transportation system. Vancouver could make a similar choice and again down-zone broad areas of the core to an ultimate development potential more closely aligned with committed improvements in transportation. Such a move would, however, be opposed by those property owners, representing two-thirds of the ultimate development potential, who have yet to achieve their individual maxima. It would not be an easy move to make

likely to do irreparable damage to its economic prospects, as is a city which allows development beyond its capacity to accommodate.

Service Capacity Constraints

In spite of zoning controls and other legal mechanisms, the real and ultimate development potential of the core will be determined most by the capacity of the urban systems serving the core and by public and investor tolerances for over-capacity situations. Eventually, as Vancouver's street system becomes more congested, and as housing in and near the core is priced out of the reach of most Vancouverites, the core will become a less and less attractive place for new investment and employment growth.

We could allow inadequate system capacity to function as an effective lid, as a "natural" rationing mechanism limiting further core growth. We could explicitly decide not to expand transportation capacity into the core or not to provide more housing for core employees, and allow the core to seek its natural level within those constraints.

The problem, of course, is that growth would not stop at some nice ideal level related to system capacity. It would continue until the situation becomes intolerable or at best just barely tolerable. Without some sort of advanced warning and control system provided by planning, growth would continue to test the system until it is on the verge of breakdown; then it would stop. The result is that we would not have a livable city, but just a tolerable city.

Controlling growth through service capacity decisions also has equity consequences. Those most likely to experience intolerable situations first are those of lesser economic means. The less-well-to-do would have fewer options to avoid the effects of approaching capacity limits. Many would be forced out of inner-city housing by those prepared to pay a higher price for reducing commuting time to the core.

Strategic Public Investment

This is the other side of the capacity constraint coin. Rather than employing service capacity in the negative sense to limit growth, it could be employed in a positive way to redirect growth. Core area services would not be allowed to deteriorate to intolerable levels,

but comparable or superior services would be provided by public investment (for example in a transit system) to either redistribute growth within the core or direct it elsewhere in the region. The appropriate investments can give certain locations an additional competitive edge, making them attractive to some of the growth that would otherwise occur in areas where system capacity is becoming a concern.

Of course, if strategic investments are to be employed, the City must be confident that expenditures and alternative locations are socially more desirable and less costly than increasing system capacity at present centres. There would also be a risk that, for a variety of complex economic and social reasons, private investment would not follow public investment.

Fiscal Mechanisms

The necessity to make public investments either to serve or to redirect employment growth focuses attention on the public benefits and costs of growth and on fiscal mechanisms designed to recoup some of the benefits. Development cost charges and differential taxes on core development are two mechanisms which have been proposed to ensure that those who benefit from core growth also share the public costs of serving such growth.

In addition to equitably distributing the costs of growth, fiscal mechanisms might also provide an economic incentive for the private sector to more carefully consider its location decisions, thus achieving a measure of self-regulating growth management. If the core investor is more fully taxed for the public costs associated with serving his investment, then he is likely to take those public costs into account in his investment calculus. Investors would have to consider the full costs of a core location, and presumably only those who still derive a net benefit would choose to locate in the core.

The most developed example of this principle for core growth management is in San Francisco. There, as a condition of development, developers are asked to compensate the city for some of the social costs involved. They are required to provide housing within the city to shelter some of the new employees attracted to the area by the offices, and they must pay a special transit tax related to the size of their proposed development. That tax goes toward transit improvements necessary to transport non-resident workers to the

and would have to be accompanied by a great deal of community consensus on the undesirability of the long-term trend.

Phased Zoning

A more sensitive variation of traditional zoning is to employ a strategy similar to that used by suburban municipalities in staging residential growth: areas are released to their ultimate development potential only as other areas approach saturation and as services are provided. For example, the entire downtown office district might have a uniform long-term density of nine-times site area. However, in the short term, only a small subarea or subareas would be allowed to achieve that density. Other subareas would be held in reserve at lower permitted densities and released to their ultimate potential only when predetermined conditions were met. Conditions would relate to the level of development in earlier-staged subareas and the presence of additional capacity in city systems such as transportation, housing, and amenities. The aggregate level of development would not be allowed to get ahead of the city and regional capacities to comfortably service that development.

This type of rezoning is also likely to meet with opposition, particularly from the owners of those properties designated for deferred ultimate potential. But opposition will be lessened if the staging corresponds to real market trends and if there is confidence that service improvements will be provided in time. Phased zoning would simply provide the City with the option of deferring development if service capacity improvements are unavoidably delayed.

Periodic Development Quotas

Some communities have looked at the idea of limiting development to a maximum number of projects, units, or floor space per year. Such quotas are argued to make the pace of development predictable, so that the city can adjust and accommodate without undue growing pains.

Quotas can be set and development can be metered on the basis of factors, such as historical trends, expected additions to transportation capacity or housing stock, and employment targets. They could be varied from year to year depending upon how well the city is

doing relative to these factors. Within the quota, permits for development can be allocated to individual developers in a variety of ways: on a first-come-first-served basis, through a lottery, by a design competition, through a point system based on development quality, or even by auction.

As might be expected, very few communities have actually implemented development quota systems, as they are quite difficult to administer without gross inefficiencies and inequities. They are subject to the imperfections of most centralized rationing schemes. If they are to be run well, they require very good and often complex information that may be unavailable. There usually needs to be a set of quite complex and arbitrary rules. These in turn usually require complex hardships procedures because the rules cannot fit all cases. If the quota system is not run perfectly, all sorts of non-productive economic behaviour may be generated: black-market office space may be illegally provided in "non-office" buildings and a secondary market for approved development permits may raise the costs of development.

Moratoria

Some municipalities have temporarily stopped growth through the imposition of a development moratorium or interim down-zoning. Toronto is one case in point where an interim down-zoning preceded the completion of long-term development controls. However, most moratoria have been applied in suburban situations where rapid residential growth was exceeding the capacities of expanding sewer systems.

As a moratorium is a very crude and frequently inequitable instrument, it is usually applied only in crisis situations. Typically these crises occur in cities with poor overall planning processes, insensitive to the cumulative implications of lots of little development decisions. As a result of the Coreplan work, Vancouver now has an increased appreciation of cumulative growth and has an opportunity through continued careful planning to avoid the trauma of moratoria and other blunt growth controls.

Moratoria work best if, during the breathing spell that they provide, the city works out a more sensitive and positive position on growth management and service provision. A city that gets itself into the position of repeated moratoria without a long-term strategy is

downtown.

Fiscal mechanisms can be quite flexible to changing conditions. They can be varied to either encourage or discourage development and they can be timed to amortize major capital investments, much like local improvement charges. They make a great deal of common sense: if we are worried about the cost of serving core development, then we could ask core development to pay those costs and decide for itself whether the benefits of central location are worth the price.

There are, however, some substantial problems in administration and in maintaining equity. The biggest worry concerns apportioning costs among those who are already in the core versus those proposing to be new entrants. Is it fair to charge an admission fee to new development when old activities have not borne a similar cost? On the other hand, why should those already there have to pay when the additional costs could be attributed solely to new growth? The problem is complicated by the fact that the costs of growth occur in large lumps related to capital project needs. Growth may proceed with very little incremental public cost until all of a sudden a new bridge, highway, or transit system is required.

Further, there are some who contend that if employment did not occur at the core, it would not occur in the region. How are the economic benefits of core employment, including direct spinoffs, to be deducted from development cost charges, differential taxes, or other methods of compensation?

Information and Informal Incentives

Finally the city can help growth manage itself by providing the market with better information. Provided with more complete knowledge about the future of the core, the consequences of that future for doing business, and the alternatives, investors may find it in their self-interest to experiment in different locations.

Some publicly financed experiments can lead the way, as can joint public/private ventures. Among the most interesting forces reshaping urban development across North America is the increasing number of fortuitous occasions where public and private interests coincide in major redevelopment projects. Such projects could become the anchors around which a new regional distribution of activity could emerge, taking pressure off the Vancouver core. If the City has a

strategy in place, it could provide the signals of certainty and confidence necessary to interest private investors in such ventures.

These more subtle, information-based incentives are unlikely to manage growth by themselves, but they can be an important contributory factor to a comprehensive strategy. They are unlikely to be of much use at all for short-term crisis management, but in a longer-term development strategy they could be quite influential in greasing the tracks.

Weighing Costs and Benefits

Obviously each of the above methods presents problems as well as solutions. None of them is ideal, and it may be that Vancouver needs a combination approach, employing several mechanisms. However, we should not choose a combination before a very careful weighing of costs and benefits in consultation with those who are likely to be affected. The current downturn in development provides an opportunity to consider these tools outside of an environment of growth crisis. Vancouver should take this opportunity to weigh its future and alternative means for managing that future if necessary. It may not be necessary at all, but should it become so, we should be prepared.

Ted Droettboom

More Housing: Not Just In Your Neighbourhood

One task of city planning is to anticipate possible futures, drawing Council's attention to aspects of these futures that residents may find unacceptable and identifying ways of avoiding or mitigating undesirable futures. In 1980 and 1981 office space construction in Vancouver's core reached record levels and plans for large public projects on the downtown peninsula were announced. To answer questions about the City's ability to cope with future growth and change, projections were made of office space and employment growth in Vancouver's core, and the significant housing, travel, and other implications of this growth were identified. Over the last two years, many Quarterly Review articles have been written about these prospects for change and growth. This article summarizes the housing and transportation problems posed by future employment growth in the core and outlines a housing strategy for addressing these problems.

Trouble Ahead?

Employment in Vancouver's core has been projected to grow anywhere from 50 000 to 100 000 jobs by 2001. These projections may seem optimistic for they are based on the trends of the last two decades and stand in sharp contrast to the very high level of unemployment in the current recession. Nevertheless, economic recovery is possible and so is a resumption of trend rates of office space construction and employment growth.

No more than 25 000, and perhaps as few as 20 000, of projected additional core employees could hope to live in Vancouver. The reason for this is that there is little potential for more housing in the city under current zoning regulations and policies. On the basis of trends this potential could be exhausted by the end of this decade.

An estimated one-third of the people who now work in Vancouver's core commute from homes outside the city. Given that far too little housing may be available to meet anticipated housing demand, as many as three-quarters of the people who will fill new jobs in the core over the next two decades may have to find homes in the suburbs. For more and more people the distance

between home and workplace will grow longer, and this will mean considerable growth in commuter travel.

For the past fifteen years, there have been few improvements in access to the downtown peninsula. Several streets and bridges are already reaching the physical limits of their rush-hour capacity. ALRT cannot be expected to accommodate much new travel demand because it is designed to replace part of the bus system. No major improvements in the capacity of the regional transportation system or in access to the downtown peninsula are planned. Accordingly, future growth in commuter travel would increase congestion, travel time and costs, and disruption of neighbourhoods along major arterials in Vancouver.

If the city's housing stock can grow so little that it might accommodate as few as a quarter of additional core employees, housing availability and affordability in Vancouver are sure to be affected. The prices and rents of both new and existing housing will rise as scarce accommodation is bid up in value by those people with the highest incomes. A considerable amount of older, affordable housing will be lost through demolition, rehabilitation, and redevelopment.

Steering Clear of Trouble

There are three basic strategies for dealing with the consequences of concentrated employment growth:

- 1) Limit office development in the core and direct it to suburban centres to reduce both the rate of employment growth in the core and the housing and travel demand generated by this new employment;
- 2) Increase the capacity of the regional transportation system to accommodate the increased traffic generated by employment growth; and
- 3) Increase housing potential in the city to accommodate core employees and reduce the rate of commuter travel growth.

What emphasis should the City give to each of these strategies? At the present time the first strategy seems too drastic and the second too costly. Both are likely to be unpopular, and they may be unnecessary if long-term growth prospects do not materialize. An in-

crease in the city's potential for more housing seems better suited to present circumstances. Housing affordability is already a serious enough problem without future housing demand putting additional pressure on a limited housing supply. Because it seeks to expand housing opportunity, the third strategy has a positive role to play no matter how small or large the dimensions of future growth might be.

More Housing...

Zoning regulations determine what land use and density of development are allowed on any piece of land. These can be amended to allow housing where it is not permitted now or to allow more of it where it is already permitted. This would involve three tasks:

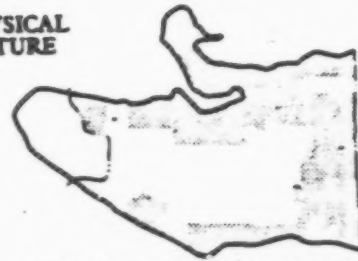
- 1) Establishing a long-term target of the number and type of dwellings (in net units) it is desirable to add to the city's zoned potential for more housing;
- 2) Identifying areas where residential land use or increased housing density can be allowed; and
- 3) Adopting area plans and zoning by-law amendments which actually increase housing potential.

In establishing a housing target, several factors must be considered: potential employment growth in the core and elsewhere in the city, expected demand for housing from retirees and other non-worker households, potential in-migration, potential new household formation by existing residents, diversity of household types and sizes, the desirability of reducing growth in commuter traffic, and the need to maintain a competitive land market.

The second task is to identify specific opportunities for increased housing potential. These opportunities include conversion of non-residential land to housing use, mixing residential use with non-residential land use, and increasing allowable density in existing residential areas. Higher densities, the most promising of these opportunities, are possible through a number of options ranging from the provision of secondary suites to wholesale redevelopment. A large supply of high-density housing is proposed for B.C. Place and is also possible in future on the central waterfront. Medium-density, ground-oriented housing elsewhere in the city might include stacked townhouses, row-houses, patio houses, zero-lot-line development, and other compact forms.

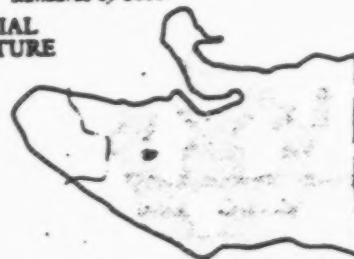
Locations and areas which are selected as most

■ SURPLUS PHYSICAL INFRASTRUCTURE



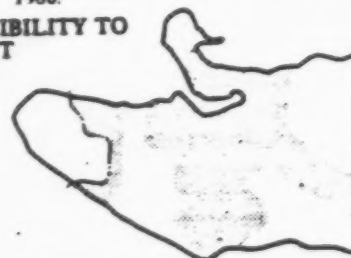
Areas with sewer service to apartment standards by 2001.

■ SURPLUS SOCIAL INFRASTRUCTURE



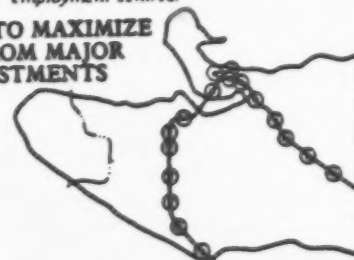
Areas with excess school capacity by 1986.

■ HIGH ACCESSIBILITY TO EMPLOYMENT



Ten-minute transit service to major employment centres.

■ POTENTIAL TO MAXIMIZE BENEFITS FROM MAJOR PUBLIC INVESTMENTS

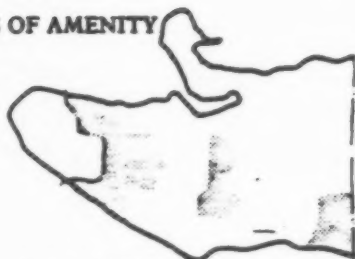


ALRT stations by 2001.

Criteria For Increase

suitable for increased housing potential should have some combination of the characteristics shown in the adjoining chart. Three general principles underlie these characteristics and should guide decisions about increased density: (a) minimize new public capital expenditures and maximize the return on existing investments, (b) minimize neighbourhood change and displacement of existing residents, and (c) promote marketable housing which can reduce redevelopment

• **HIGH LEVELS OF AMENITY**



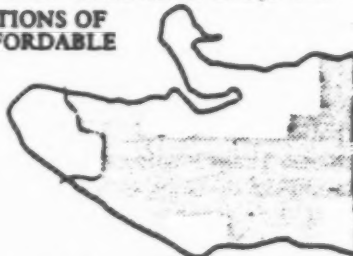
Areas with a high ratio of park space per capita.

• **HIGH NET GAIN IN DWELLING UNITS**



Non-residential areas and residential areas with less than 15 units per acre.

• **LOW PROPORTIONS OF EXISTING AFFORDABLE HOUSING**



Areas with assessed values per dwelling unit above city average.

• **MARKETABILITY**



Areas with higher than average residential land values, adjusted for zoning.

ed Housing Potential

pressure on existing affordable rental housing.

... In Your Neighbourhood

While most citizens accept the desirability of expanding housing choice, many resist initiatives to increase the potential for more housing near where they live. "Yes, but not in my neighbourhood!" is very often the response to proposals for amending zoning regula-

tions to permit multiple housing in areas of single-detached homes.

The dimensions of this conflict were uncovered by the Vancouver City Planning Commission during its Goals for Vancouver program four years ago. About ninety percent of the many city residents who participated in this program wanted a broader range of housing rents and prices in the city as well as a wider range of housing types. However, the public also strongly supported the preservation of existing single-family areas. The VCPC found that:

"Providing new affordable multiple housing by replacing existing stock has received a generally negative response from neighbourhoods where citizens are adequately housed . . . Our public contact shows the community to be split down the middle on whether to allow multiple housing forms in all areas or concentrate it in only a few districts. A decision one way or the other will leave a large portion of the public dissatisfied."

Considerable public debate will likely be necessary to reconcile the city-wide and long-term benefits of expanded housing opportunity with the wish to preserve existing low-density neighbourhoods. The suitability of any particular neighbourhood for contributing to increased housing potential will have to be clearly demonstrated. In areas which emerge as candidates for more housing, consultative planning will be necessary to determine with local residents what sorts of increased housing potential are possible and what can be done to minimize any problems that more housing could create.

A Practical Strategy

Increasing Vancouver's potential for more housing could solve problems associated with core employment growth. Of course, developers must be relied upon to produce housing in areas with new potential if housing opportunity in the city is to expand as desired. The problems of housing availability and affordability may not become less serious, but perhaps they will be prevented from becoming far worse. While some investments in transportation amenities, and other services and facilities might be required, these expenditures are likely to be far less than those needed to transport an ever-growing number of suburban residents to jobs in Vancouver's core.

Phil Mondor



Stretching Transportation Capacity: An Inventory of Ideas

In July and October last year, the Quarterly Review explored the transportation implications of core growth. Because new office jobs are concentrating in downtown Vancouver while most new housing is being provided in the suburbs, demands on the region's transportation system are increasing. Within the not-too-distant future, those demands could exceed the capacity of the existing and proposed transportation network.

If the trend continues, the City and the GVRD will have to struggle with the alternatives of providing expensive new transportation facilities or restructuring the pattern of urban growth to reduce the need to commute. Unfortunately, both alternatives are only achievable in the long term. Between now and then, traffic could get much worse and accessibility to the Vancouver core could deteriorate significantly.

But will the trend continue? For a variety of reasons, there is increasing uncertainty that the phenomenal growth of the recent past will extend into the future. Growth in downtown employment and in transportation demand could slow down significantly over the next several years as Vancouver adjusts to the maturation of the baby-boom, the introduction of office automation, and the general restructuring of the North American economy. Were our transportation and land-use planning not wary of these emerging forces, the City could lock itself into a difficult or expensive solution for which there may be no problem.

In this environment of uncertainty, it makes some sense for Vancouver to delay costly commitments to comprehensive alternatives and concentrate instead on making marginal improvements to the existing system. Vancouver could do a good deal more to use the existing transportation network more efficiently, in effect stretching its capacity through improved management.

Such a short-term capacity-stretching strategy has a number of advantages:

- It could postpone some major capital improvements which would be difficult for government to afford

right now;

- It could give us more time to assess the emerging trend before committing major expenditures based on that trend or past trends;
- It could soften the transition between now and the long term, maintaining more tolerable congestion levels in spite of increasing travel demand;
- It could provide more time to achieve workable and acceptable long-term solutions if they are needed.

The one major disadvantage is that efficiency improvements could lead us into a false sense of security and thus delay our serious consideration and attainment of the more fundamental changes which may still be necessary in the long term. This needs to be studiously avoided by foresightful monitoring and planning.

Improvements Now in the Works

A number of efficiency improvements are, in fact, now being pursued by the City Engineering Department and other agencies. Together, these relatively low-cost initiatives could noticeably slow the growth of some transportation problems.

1. Computer-Aided Traffic Signal System

In the last capital plebiscite, voters approved funding for a new computer-controlled traffic signal system. Computer control synchronizes sequences of signals and varies timing among linked signals to match changing traffic demands. This minimizes stopping and maximizes traffic volume.

An Engineering Department study estimates that a computer-based system of traffic signals could be twice as effective as conventional signals in reducing delays and in improving automobile fuel consumption. It would also reduce accidents, moderate the growth in air and noise pollution, and help curb the use of residential streets by non-neighbourhood traffic. Further, buses could be given priority over other traffic.

2. Intersection Redesign

The voters also approved funds for the rebuilding of some intersections. Peak-period traffic flows on major streets can be slightly increased and delays reduced by eliminating the conflict between turning and through traffic. The most effective way to do this, without diverting more traffic onto residential streets, is to channel turning traffic - particularly left turns -

into special bays where they can wait for turning opportunities without delaying through movement.

3. On-Street Parking Restrictions

The City is proposing to extend the present on-street parking restrictions in both time and in area. Time extensions beyond the traditional 7 to 9 and 4 to 6 periods are consistent with the spreading of peak traffic volumes to cover a greater period of the day, compensating for growing congestion. Extensions in the area covered by parking restrictions can put more moving lanes into service during the peak period.



4. Bus Priority Measures

At traffic bottlenecks such as bridges, exclusive lanes enable buses to move around congestion. Such "queue jumpers" make bus travel faster, and therefore more attractive to commuters, and preferentially allocate street space to a more efficient use - transit.

5. Park-n-Ride Facilities, Convenient Transfer Terminals, and Bus Shelters

The regional transit system continues to implement improvements to make transit the commuter's choice. Park-n-ride combines the efficiency of transit with the flexibility of the automobile. Providing parking close to transit encourages more people to leave their cars outside the core and to traverse congested core streets and other bottlenecks by transit. More shelters and convenient transfers at suburban terminals can also make the transit system more attractive.

6. More and Larger Buses

The regional bus system is considering an expansion plan that includes the purchase of larger, articulated buses. A bus can transport fifty or more people in the same space consumed by two or three automobiles. The new articulated buses, consisting of two parts coupled like a tram, can carry even more, not only maximizing street efficiency but also reducing operating costs per passenger on heavily travelled routes.

Some Ideas for the Future ...

Beyond the immediate improvements described above, there are other measures that could be taken to stretch transportation capacity further. These are put forward simply as ideas at this time as their feasibility in Vancouver has not been evaluated. However, some could be tried as experiments during Expo '86, the Vancouver World's Fair on transportation.

1. Turn Down Traffic Volume

In the mid-1970s, Vancouver experimented with a project called Turn Down Traffic Volume. This project had two thrusts: to encourage the formation of car pools, and to spread the peak traffic period by introducing greater variability in working hours. Neither thrust was successful, and the project evaluation concluded that it was ahead of its time. Congestion was not bad enough and the costs of commuting were not high enough to induce many people into car pools or many firms into variable working hours. Even today, most people find it quite easy to get to the core in the morning and return to home at night; and compared to the other things in life, commuting is not very costly either.

But that is today. With further core growth, future traffic conditions could get much worse. At some time, perhaps as early as the summer of 1986 when Fair visitors add to the daily volumes on city streets, we could dust off our old computer programs for car pool matching and see if the idea might work this time.

If it tries the idea again, the City might want to accompany the advertising and computer-matching services with a few more tangible incentives, such as reduced rates for car pools at City-operated parking garages or permission for pools to use bus-only lanes. It is very important, however, to design these incentives so as to entice present auto drivers into sharing rides, rather than converting present transit riders to car

pools. The latter yields little net benefit to the public. Incentives should also be limited to high-yield car pools. In other cities, incentives are available only for vehicles containing at least four people.

2. Bus Improvements

Of greater potential net benefit than car pooling is increased transit ridership. Even after ALRT, over 80 percent of transit ridership is going to be by bus, so it makes some sense to think about how the fleet might be better used. After making sure that transit goes from where people are to where they want to be, the next most effective measure to increase ridership is to make the service attractive and frequent, without being unduly costly. The bus fleet replacement program is significant step in this direction, though it is regrettable that the cost of replacing antiquated equipment will not permit a larger fleet expansion.

Other improvements that could be tried include:

- expanded exclusive or priority bus lanes;
- computer-aided bus monitoring and schedule information, allowing riders to know exactly when the next bus to their destination will arrive;
- self-serve fares (as on Seabus), permitting loading from both front and rear doors; and
- variable fare structures to encourage bus ridership during particular periods of the day or in particularly congested areas.

3. Road Pricing

Some cities have tried to reduce core congestion by charging drivers for the congestion they create, for the additional road construction and policing expenditures they necessitate, and for the time they cause others to waste. The general principle is called road pricing. It can be implemented in a variety of simple and familiar ways, including road and bridge tolls and taxes on downtown parking. In fact, the City's present system of structuring tariffs in its own parking garages to discourage commuters and encourage short-term use is one example of the principle in practice. More sophisticated systems have been devised as well, including a computer which automatically reads permit decals on cars as they pass certain check points and sends out a monthly bill for road usage.

Road use and parking prices can be structured in a variety of ways to:

- generally discourage travel by auto except when

necessity justifies the toll;

- tip the economic scales further in favour of transit;
- discourage automobile travel during certain periods of the day and encourage it during others;
- encourage car pools; and
- redistribute traffic to alternative routes.

4. Core Circulation Improvements

One of the more vexing aspects of core change – perhaps even more troublesome than peak-period commuting – is the growing problem of getting around the core during the day. At mid-day, shopping and other non-work-related trips merge with couriers, salesmen, and others moving about the core on business. During this period, on-street parking is also at a maximum, reducing the number of lanes available for driving.

There are a number of ways to improve internal circulation, encouraging people to leave their cars at home – or at least in parking garages – and to rely instead on transit or other means of mid-day travel around the core. These vary from the mundane to the space-age and include:

- people-mover systems, ranging from moving sidewalks to automated transit vehicles;
- extension of the planned ALRT system within the core to encourage its use for internal circulation;
- new and expanded taxi or jitney services;
- traffic-free or parking-free zones to permit unimpeded pedestrian, transit, or taxi travel within the zoned areas, perhaps coupled with convenient parking on their periphery;
- free-fare or reduced-fare bus zones;
- expanded pedestrian weather protection to encourage walking rather than driving;
- grade separation of pedestrian and automobile traffic where convenient to both;
- delivery bays and rationalized courier services to reduce the incidence of double parking; and
- increased substitution of electronic mail and facsimile transmission for physical couriers.

5. Cooperative Parking Management

The City already employs parking policy to encourage transit ridership. For example, the amount of parking provided in new development is limited to a maximum permitted by the downtown zoning, and the rates in City-operated parking garages and for on-street



parking meters are established to discourage commuter use. The City Engineer's recently stepped-up parking enforcement program is reinforcing this direction.

The next step may be to enter into some sort of cooperative arrangement among the downtown's public and private parking providers. By joining in a parking management organization, parking operators may be able to maximize use of parking facilities and reduce congestion at the same time. For example, electronic message signs or low-powered radio signals could be used to let drivers entering the downtown know where parking is available and what lots are full. This could reduce the amount of circulation which occurs in the search for appropriate parking.

There are some other ideas, as well. Instead of providing parking themselves, developers could give the City "in-lieu" payments. The funds thus accumulated could be used to consolidate parking in more efficient locations or finance transit substitutes. Transit passes might be encouraged as an alternative prerequisite to free employee parking.

... Not All Will Work

Many of these ideas will be regarded as too difficult, too speculative, or just too crazy. Many will not work, but some could catch on and provide means by which Vancouver might stretch transportation capacity and comfortably accommodate a bit more core growth. And that is the point: With a little imagination and perhaps a little personal sacrifice, there are some relatively inexpensive things we can do now to make the transportation situation more tolerable. They may not last forever, but they can help while we assess the long-term trend and work on more fundamental solutions.

Ted Droettboom

